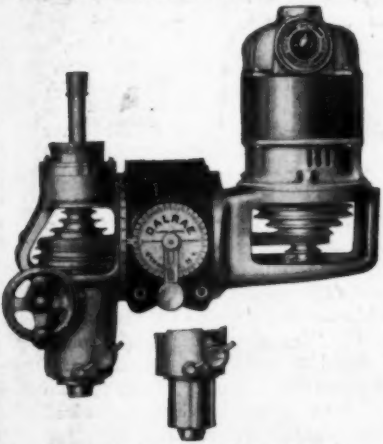
HITCHCOCK'S
Machine Tool BLUE BOOK

FOUNDED JUNE 1937 19

Announcing—

The DALRAE MIDGETMILL



with Lead Screw Feed

•

It BORES
DRILLS
MILLS

•

Six spindle speed
275 to 4000 r.p.m

Built to fit any overarm

Correct speed f
the little tools.

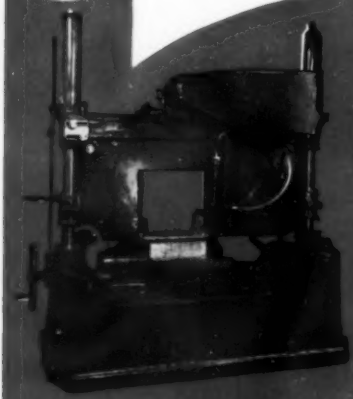
For convenience, use Coupon No. 1 when you write for information.

DALRAE TOOLS CO. Syracuse Bld
Syracuse N.

PUBLISHED AT 508 SO. DEARBORN ST., CHICAG

MARVEL

The MARVEL No. 18 Hack Saw



for Big Work

Capacity 18"x18" Hydraulic Roll Feed Universal

especially designed for

Steel Mills, Warehouses, Forge Shops, Die Shops,

and all other heavy duty large size work.

A Heavy Duty Saw, especially designed for the larger sizes and tougher alloy steels of **today** and **tomorrow.** This saw introduces two important features in power saws (1) The roll stroke (a new action similar to the chip-clearing action of a carpenter's hand saw) that ends "dragging" of blade through the cut; and (2) New **low pressure** hydraulic feed—so simplified that anyone can understand, operate and maintain it. This giant saw sets a new standard and a pattern for the saws of tomorrow.

Send Coupon No. 5 for Bulletin 18

ARMSTRONG-BLUM MFG. CO.
5841 Bloomingdale Ave., CHICAGO

LESS BREAKAGE

WITH FAST CUTTING

WELDON

END MILLS

You'll See the Difference

When You Use the

Weldon Cupped-End Mill

This new mill embodies the following desirable features:

1. **Stronger,** because of scientifically controlled heat treatment.
2. **Faster,** because of improved flute design. Take full advantage of shear-cutting action.
3. **Costs Less,** Let our representative show you why. May we send him?

Send Coupon No. 37 for complete catalog

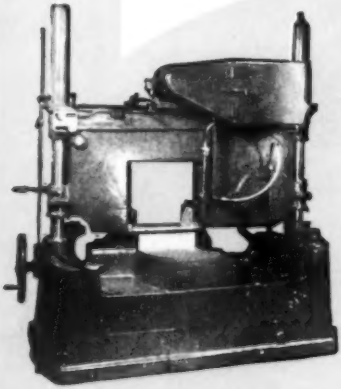
THE

WELDON TOOL CO.

"PIONEERS IN FAST SPIRAL DOUBLE-END, END MILLS"

321 FRANKFORT AVE.
CLEVELAND, OHIO

The MARVEL No. 18 Hack Saw



for Big Work

Capacity 18"x18" Hydraulic Roll Feed Universal

especially designed for

Steel Mills, Warehouses, Forge Shops, Die Shops,

and all other heavy duty large size work.

A Heavy Duty Saw, especially designed for the larger sizes and tougher alloy steels of **today** and **tomorrow.** This saw introduces two important features in power saws (1) The roll stroke (a new action similar to the chip-clearing action of a carpenter's hand saw) that ends "dragging" of blade through the cut; and (2) New **low pressure** hydraulic feed—so simplified that anyone can understand, operate and maintain it. This giant saw sets a new standard and a pattern for the saws of tomorrow.

Send Coupon No. 5 for Bulletin 18

ARMSTRONG-BLUM MFG. CO.
5841 Bloomingdale Ave., CHICAGO

LESS BREAKAGE

WITH FAST CUTTING

WELDON

END MILLS

You'll See the Difference

When You Use the

Weldon Cupped-End Mill

This new mill embodies the following desirable features:

1. **Stronger,** because of scientifically controlled heat treatment.
2. **Faster,** because of improved flute design. Take full advantage of shear-cutting action.
3. **Costs Less,** Let our representative show you why. May we send him?

Send Coupon No. 37 for complete catalog

THE

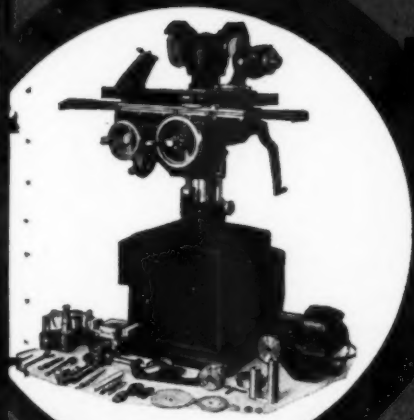
WELDON TOOL CO.

"PIONEERS IN FAST SPIRAL DOUBLE-END, END MILLS"

321 FRANKFORT AVE.
CLEVELAND, OHIO

To save time and trouble, use QUICKMAIL COUPON No. 24 when you write for Bulletin 100B.

UNIVERSAL CUTTER AND TOOL GRINDERS



For Accurate and Economical Grinding

The Gra[illegible] Universal Grinder is designed and built to meet the demand for a high grade machine of medium capacity to sell at a moderate price. Convenient operation received first consideration. These machines may be operated from either front or rear. Transverse, vertical and longitudinal movement can be made from either position by hand wheel or lever.

Send Coupon No. 72 for Bulletin Giving Complete Information

MANUFACTURED BY

GALLMEYER & LIVINGSTON CO.

303 STRAIGHT AVE., GRAND RAPIDS, MICH.

COLLET AND FEED

Send Quickmail Coupon No. 2 for this bulletin No. 36 if you have

LATHES and MILLERS

HARDINGE COLLETS FOR: American, Ames, Boye & Emmes, Carroll & Jamieson, Chard, Cincinnati, Cisco, Dalton, Flather, Greaves-Klusman, Hamilton, Hendey, LeBlond, Monarch, Porter Cable, Pratt & Whitney, Rahn Larmon, Reed-Prentice, Rivett, Rockford, Sebastian, Seneca, Sidney, South Bend, Springfield, Stark, Sundstrand and our own Hardinge Cataract Lathes.

HARDINGE COLLETS FOR: Ames, Becker, Burke, Pratt & Whitney, Reed-Prentice, Rockford, Stark, Sundstrand, Van Norman and our own Hardinge Cataract Millers.

Bulletin No. 36 gives complete information; dimensions of standard collets; lists attractive prices; makes ordering easy. Gives location of collet stocks in six important centers in the United States.

—SPECIFY HARDINGE COLLETS—

HARDINGE BROTHERS, Inc. - - - ELMIRA, N. Y.

FINGER SECTION

Send Quickmail Coupon No. 3 for this catalog 34A if you have
AUTOMATIC and HAND SCREW MACHINES

MORRISON COLLETS, FEED FINGERS, MASTER COLLETS, MASTER FEED FINGERS AND PADS FOR: Brown & Sharpe, Cleveland, Cone, Gridley, National Acme, New Britain, Davenport, etc., Automatics.

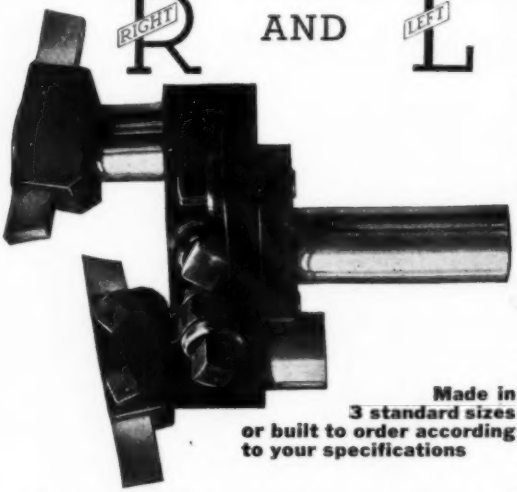
MORRISON COLLETS FOR: Bardons & Oliver, Cincinnati, Foster, Garvin, Pratt & Whitney, Warner & Swasey, etc., Hand Screw Machines.

Catalog No. 34A gives complete ordering information and lists attractive prices. Illustrates and describes Style "B" Morrison Master Feed Fingers and Pads which eliminate scoring of stock.

—STANDARD SIZES FROM STOCK—

MORRISON MACHINE PRODUCTS, Inc., ELMIRA, N. Y.

RIGHT R AND LEFT L



Made in 3 standard sizes or built to order according to your specifications

Save On Your Set-Up Costs With This Combination Tool

By using various adjustments, one R & L turning tool can be made to perform a variety of operations, singly or together, thereby saving not only tool costs but time required for setting up machines. Extremely fine adjustments are provided both on the tool and on the pressure of the burnishers.

Ask for complete details

R AND L TOOLS

Turning Tool

Entire tool is made of heat — treated alloy steel

Easily Changed In 10 Seconds For Right Or Left Hand Work

Speed in making set-ups is essential to economy. An R & L Turning Tool can be assembled and adjusted quickly for almost any kind of turning work. Tantalum carbide faces on the backrest act as a burnisher, eliminating rollers and misalignment due to roller wear and producing a highly polished surface.

Send today for your booklet

Nicetown, Philadelphia, Pa.

A "Buffalo" BENDING ROLL DID THE JOB IN 1-13th THE TIME!

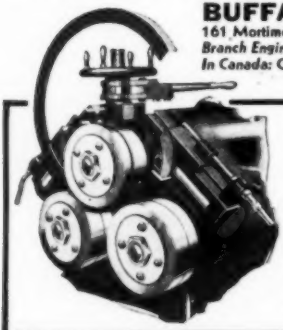
When one of the world's most prominent steel fabricators wanted to reduce his high cost for curving angles, the engineers decided to install a "Buffalo" Bending Roll. The results were so amazing that they wrote us giving complete data, some of which we list below.

"These are actual figures from our shop records of man hours for curving angles by our old method compared with the new "Buffalo" angle roll. Some of the saving is due to being able to do the work with fewer men and some is due to the speed of operation. You will note we gain considerable by being able to curve six-inch leg-in on small radius work."

No. Pieces	Sizes & Length	Curved to Radius	Man Hours Old	New	Ratio
10	4x4x⅜ 38' 0"	58' Leg-in	11	2.1	5.25:1
10	6x6x½ 13'0"	4' Leg-in	42	3.2	13.00:1
10	5x3x⅜ 15' 0"	4' 5" Leg-out	15	2.6	5.80:1
63	3½x3½x7/16 16' 0"	5' Leg-out	30	8.6	3.50:1

If you are interested in similar savings and in speeding production, it will pay you to send **COUPON No. 8** now for all the facts on "Buffalo" Bending Rolls.

BUFFALO FORGE CO.
161 Mortimer St., Buffalo, N. Y.
Branch Engineering Offices in Principal Cities
In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.



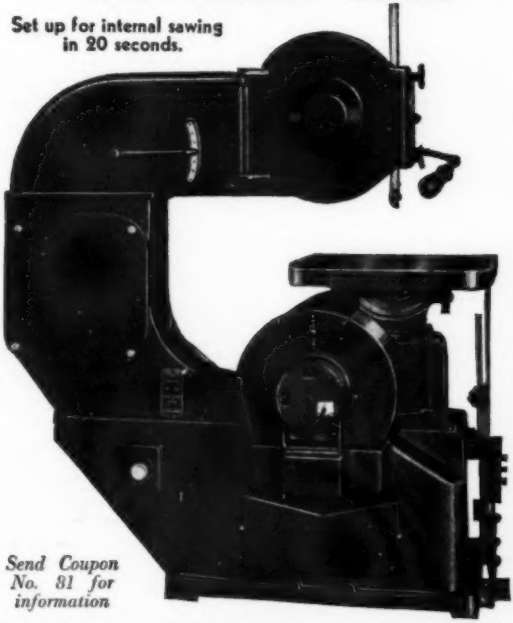
Patented Leg-In Device

Speeds production — avoids necessity of extra work on angles after bending operation. Automatically holds angle at 90 degrees. Soon pays its cost.

AN ACHIEVEMENT IN DIE MAKING

THE WORLD'S BEST DIE BAND SAW

Set up for internal sawing in 20 seconds.



Send Coupon No. 81 for information

GROB Open End Band Saw Type OS 36

Ideal for very intricate small dies.
Equally good for large, heavy work.

GROB BROTHERS

GRAFTON **WISCONSIN**

H & W DIEING MACHINES

for Automatic Production

Long Die Life

•

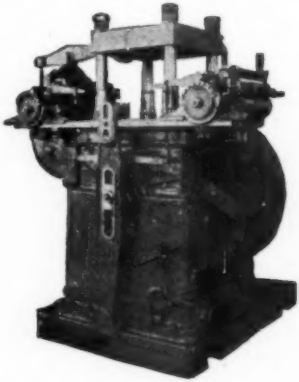
Completed Parts at Each Stroke

•

Extreme Precision

•

Completely Automatic

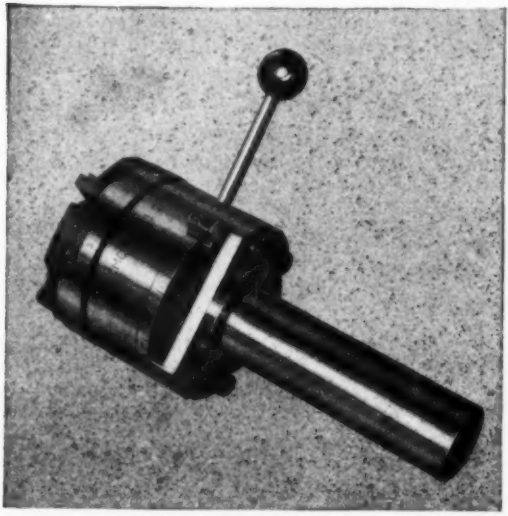


Not just a press with a feed attached, the DIEING MACHINE is designed throughout for maximum results in automatic stamping production. Dies last longer because of scientific guiding and the precision limits to which the DIEING MACHINE is built.

Attach Quickmail Coupon No. 82 to your letterhead for your copy of Catalog A-3

The Henry & Wright Mfg. Co.
HARTFORD, CONNECTICUT

"PIONEERS IN GROUND THREAD CHASERS"



THREAD TROUBLES STOP WHEN J&L DIES BEGIN

The J&L Tangent Dies are particularly adapted to long runs. They are hardened and ground throughout—precision tools giving precision results. The ground thread Chasers may be removed and reset accurately and more easily than any other long life threading tool. They are guaranteed to cut threads of a Class 3 fit.

Only one set of Chaser holders is required for any right-hand thread within the Die capacity regardless of diameter or pitch.

SEND QUICKMAIL COUPON #9 FOR CATALOG

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT, U. S. A.

THE CLINCHOR

A MACHINE FOR AUTOMATICALLY FEEDING AND SETTING CLINCH NUTS

- *Set clinch nuts in a machine made for just that purpose.*
- *Set them easily and efficiently.*
- *Realize the savings that this method will make for you.*

The nut is automatically placed in the anvil. The work is placed over the nut. A slight pressure on the foot treadle starts the machine operation to set the clinch nut and supply another nut to the anvil. May we send you a circular describing these machines?

Coupon No. 14 will bring full information.

THE TOMKINS-JOHNSON CO.

605 N. Mechanic Street Jackson, Michigan

European Office: GASTON E. MARBAIX, Ltd.

Vincent House, Vincent Square, London S.W.1, England

1905 **Strand** 1937

FLEXIBLE SHAFTS

Type M P 5

FLEXIBLE SHAFTS
AND
MACHINES

FOR THE
METAL PATTERN SHOP
MACHINE SHOP
DIE SHOP and ALL
METAL WORKING
PLANTS

HIGH
QUALITY
MACHINES
ONLY

Type M 6 C

Type R F M 4

— ROTARY FILES —

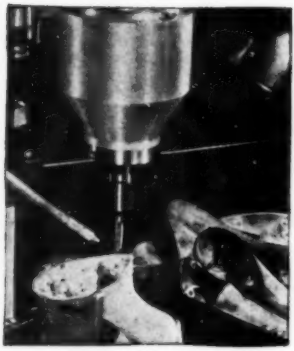
THE MOST POWERFUL FLEXIBLE SHAFT MADE

Send for our Catalog—Sixty Types and Sizes

USE QUICKMAIL COUPON No. 26

N. A. STRAND & CO.

5001-5009 No. Lincoln St. CHICAGO



One of a series of case histories showing tough jobs made easy by The Haskins Tapper.

Material ..... Zinc Base Die Casting

Production ... (three Holes) 525 pieces per hour

Size of Tap ..... 5/16"—18

Depth of Tapped Hole . 3/8"

RPM of Tap "in" 1750

RPM of Tap "out" ... 3500

Previous Production ..... 280 pieces per hour

PRODUCTION STEPPED UP 84%

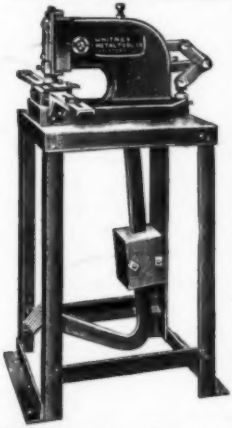
By the old method: A 35 pound fixture . . . excess handling . . . unnecessary operator's fatigue. By the *Haskins* Method: A three pound fixture . . . no extra handling . . . no clamps . . . a new high tapping speed . . . fatigue reduced.

Of course production increased. That's the natural result of the exclusive features originated by Haskins and found only in the Haskins Tappers. Write today for illustrated booklet. It's free.

Quickmail Coupon No. 21
Will Bring Illustrated Booklet.

R. G. Haskins Company
4654 W. Fulton St., Chicago

Haskins
Hi-Speed TAPPING EQUIPMENT



WHITNEY

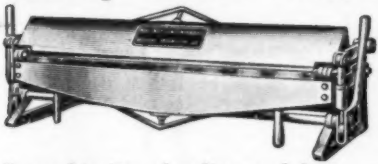
World's Leading Manufacturers of Punches & Shears

Whitney Foot Press

Made in two sizes, with 7-inch or 10-inch throats. Capacity is 2-inch hole in 16 gauge iron. Height of throat in either model is 4 inches. Ram adjustment is ¾-inch, with 1-inch punch hole in ram.

Stroke of ram is 1 inch. Two-angle notching punch and die is furnished with each machine at slightly higher cost.

Whitney Jensen Portable Brake

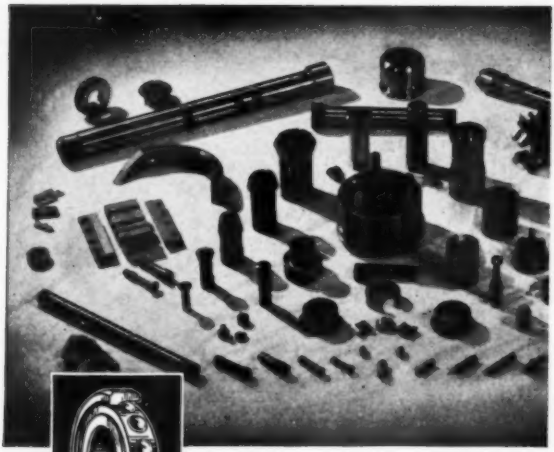


Bench type can be easily converted to floor type machine by adding a sub-base.

A combination bending and box brake specially adapted for air conditioning and ventilating work, where bending and forming must be done at the job. Both bench and floor types are easily taken from shop to job.

Send Coupon No. 42 for complete Whitney catalog.

WHITNEY METAL TOOL COMPANY
ROCKFORD ILLINOIS



Precision . and "Modern Products" Get

Speed—the keynote of a modern age! R. P. M.'s stepped up to unbelieveable figures . . . and bearings must meet entirely new service requirements. Bearings used today are necessarily made of finer materials and to more exacting standards than ever before, and production needs call for the best in machinery, tools and repair parts.

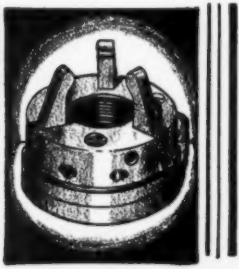
At the present time, when screw machine repair parts or tools are needed, close to 100% of the bearing manufacturers specify MODERN PRODUCTS. Accuracy . . . efficient operation . . . long life . . . economy are the reasons why, in the manufacture of bearings or any other product, MODERN PRODUCTS are first choice with over 1300 concerns.

MODERN COLLET & MACHINE CO.

MODERN FINGER HOLDERS

Perfectly Equalized Members
Exceptional Durability
Positive Gripping Action

Equalizing members are incorporated in each MODERN FINGER HOLDER so that the finger automatically takes an equal share of the load. Requires no care or attention and is practically indestructible. Assures a more powerful grip and increases the life of the fingers a full 100%. Your machine will chuck up the work at least 25% easier with this type holder. It is made of the best steel obtainable, treated for durability and machined to accuracy that permits interchanging at all times.



The Call!

THE NEWEST AND MOST COMPLETE CATALOG

. . . on screw machine parts and tools is our Catalog 33. Write for it today! For your convenience, use Quickmail Coupon No. 28.

403 Salliotte St., ECORSE, MICH.

THE *"HOLE"* PROBLEM SOLVED

WITH THIS PATENTED

ZIEGLER

ROLLER DRIVE FLOATING TOOL HOLDER

- COMPENSATES FOR SPINDLE MIS-ALIGNMENT.
- ELIMINATES BELL-MOUTHED OR OVERSIZED HOLES.
- REDUCES COST OF BROKEN CUTTING TOOLS.

Reproduces the accuracies of cutting tools such as taps, reamers, etc.

Special shanks and special holders furnished to meet all requirements.

Increases Production

Reduces Set-Up Time

USE WHEN

TAPPING— REAMING—
COUNTER-BORING— DIE-HEAD FLOATING—

Try one on your toughest job

Send Coupon No. 43 for Catalog

W. M. ZIEGLER TOOL CO.

509 LEIB STREET, DETROIT, MICHIGAN

For Heavy GRINDING

On heavy construction work—where power, speed and portability are factors—you'll find new economy, new plant efficiency and increased production capacity with HASKINS.

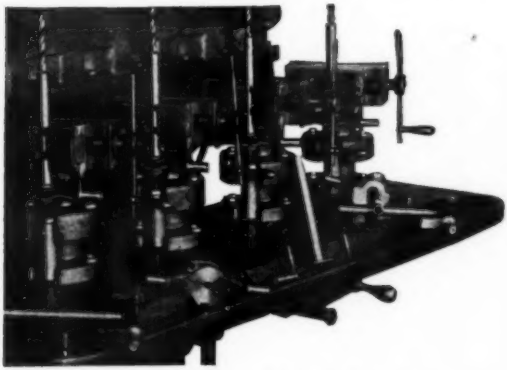
Before installing any flexible shaft equipment consider the greater adaptability of HASKINS . . . the wide range of equipments . . . the many accessories that are available for various types of work.

Use Quickmail Coupon No. 22. It will bring you catalog—full of valuable information.

R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO

Haskins
FLEXIBLE SHAFT EQUIPMENT

QUICK ACTION
RIGID CLAMPING
PERFECT VISIBILITY
—AND—
PLENTY OF CHIP ROOM
TEND TO GIVE YOU
"REAL PRODUCTION"



The "JOHN'S" JIGS combine all these features at a reduced tooling cost.

Adapted as a Standard Tool in most Automobile and Production Plants.

Write us for further information or send Coupon No. 83 for literature

HEUSER MFG. COMPANY
1638 N. Paulina St., Chicago, Ill.

If You're Looking For

COUNTERBORES That Really CUT COSTS!

Screw and bolt heads *never* fail to seat properly, regardless of irregularities in their shape or size, when PUTNAM FAST-SPIRAL SOLID COUNTERBORES are used! The counterbore diameters of both the cutter and pilot for body size holes are 1/32" over listed sizes—a trouble-saving feature that is exclusive with PUTNAM. Flutes are three times longer than those ordinarily used, and the chip clearance is greater in proportion to the diameter. They are designed and constructed for the maximum in efficient, long-wearing cutting life—and to show definite savings in YOUR production costs!

●

CATALOG NO. 3 lists the complete line of Putnam Tools—end mills, reamers, counterbores and special tools. Your copy is waiting. Simply send Quickmail Coupon No. 67—Today!

PUTNAM TOOL CO.
2983 CHARLEVOIX AVE. DETROIT, MICH.

Protect Quality and Quantity with GOOD EQUIPMENT

Milling Machines

Grinding Machines

Screw Machines

Machinists' Tools

Cutters and Hobs

Pumps

Misc. Shop Equip.

B·S

Have you our general catalog No. 140? A copy gladly sent on request. Brown & Sharpe Mfg. Co., Providence, R. I., U. S. A.

BROWN & SHARPE

Do you have a grinding problem?

The New Sunnen Precision Honing Machine will grind and finish any hole from .480" to 2.400" dia. up to 7" in length without straight keyway in any metal except lead or babbitt. Guaranteed accuracy of .0001" — used for experimental, assembly, tool room, small production, salvage, et cetera.

● IF YOU HAVE A GRINDING PROBLEM, write us about it. Tell us the size of the hole, kind of metal, amount of stock to be removed and send along a print if possible. We will be glad to tell you what this machine will do for you.

A TYPICAL JOB—

A TYPICAL LETTER

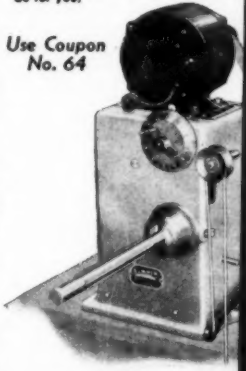
"About a year ago, we purchased a Sunnen Precision Hone to be used in our factory for grinding plunger holes in our lubricator castings.

"We were having great difficulty in getting these holes perfectly round and straight by any practical method that we had been able to locate up to the time of getting your grinder. About the best we could do was to employ a method of internal grinding, but our rejects ran quite high.

"After getting your Precision Hone, we were able to reduce our total rejects by 75 per cent immediately. After a few weeks' experience with your grinder, we were able to eliminate rejects almost entirely.

"In addition to this superior quality of work, we were able to reduce our costs for this operation by about 50 per cent."

Use Coupon No. 64



SUNNEN PRODUCTS CO.
7928 Manchester Ave.
ST. LOUIS, MO. CHATHAM, ONT.

SUNNEN

The **SUNNEN PRECISION HONE**

IT GRINDS—IT HONES—IT LAPS

High Cycle

"The Facts About Rotor High Cycle Tools"

This new booklet gives the engineering, production and operating facts about High Cycle Electric Tools and describes the entire line of Rotor High Cycle Tools. A copy is yours for the asking.

Send Coupon No. 27

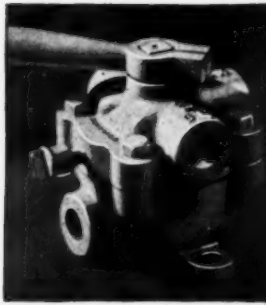
ROTOR AIR TOOL COMPANY
CLEVELAND OHIO

NOPAK

3 and 4-Way Operating Valves

FOR AIR, WATER AND OI

SHUT OFF VALVE



3 AND 4-WAY VALVE

Sturdy yet simple in construction, NOPAK Operating Valves offer long, efficient operation without maintenance cost, and with absolute freedom from leakage.

The NOPAK flat disc design provides advantageous port spacing, which insures positive, accurate control with both throttling or quick opening action, as desired.

- **No Packing**
- **No Maintenan**
- **Leakproof**
- **Protected Di and Seat**
- **Quick or th tling action desired**

WRITE for Bulleti

Use Quickma Coupon No. 2

GALLAND-HENNING
MANUFACTURING COMPANY
2753 South 31st Street Milwaukee, Wisconsin

Control air pressure with Norgren Regulators—give your tools a chance to do what they're intended to do. Only Norgren Regulators have phosphor-bronze diaphragms floated on resilient members for quick bounce-back.

For Catalog Send Coupon No. 75

C. A. NORGREN CO., Inc.
214 Santa Fe Drive, Denver, Colorado

M-B "Heavy Duty" Air Grinder

As far ahead of others in its field and capacity as our "Super Speed" grinder is in its own class

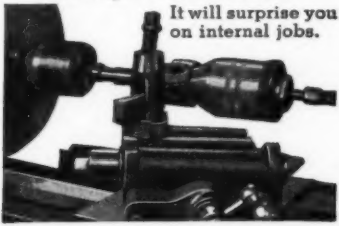
3

ranges of speed 25,000 45,000 and 65,000 r. p. m.

For a thousand and one tough hand jobs

Designed for the utmost ease of handling and control of air.

It will surprise you on internal jobs.



3

stages of power with maximum rating of over ¼ h. p.

M-B "Super Speed" Air Grinder

An outstanding performer. The only hand grinder with spindle speed of 100,000 r. p. m. on 100 pounds air pressure. It operates on pressure as low as 45 pounds. Amazing power. Weight, only 8½ ounces.

Send Coupon No. 38 today for full details

M-B PRODUCTS 128 E. Larned Street, DETROIT, MICH.

Actual Size

FEDERAL

Announces their

MODEL TWO

1/10,000"

UNIVERSAL TEST INDICATOR

Send for Circular

FEDERAL PRODUCTS CORP.

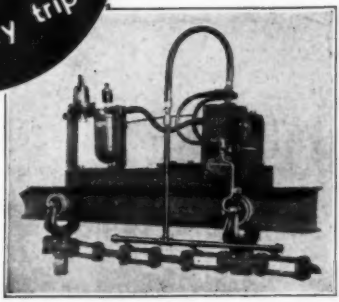
1144 EDDY STREET, PROVIDENCE, R. I.

Detroit . Chicago . Muncie . Cleveland . New York

Send Coupon No. 54 for Catalog

Automatically
Lubricates
Every pin in
Every link
Every trip

Keeps conveyor chains young!



When the conveyor stops, production stops.

Avoid down-time due to conveyor chain breakage. Save power, save lubricant, insure smoother operation and longer life to your trolley conveyors by installing a Fauver Lubricator on each line. It automatically lubricates every chain pin every time it passes, applying lubricant in the form of an easily regulated jet of oil mist. At the same time will automatically lubricate trolley wheel bearings if desired. No excess lubricant to drip on work. Easily installed. Quickly pays for itself.

Send Coupon No. 76 for circular

J. N. FAUVER CO., INC.

87 Selden Ave., Detroit, Mich.

"This OLIVER sure is a great GRINDER"

You'll find this disk and belt Grinder in daily use at Ford Motor Co., Hudson Motor Co., General Electric Co., etc. It *must* be good! On small, tough jobs grinding away bits of metal quickly, smoothly, and also on polishing you will find this grinder a dependable time and labor saver. Fine for circular and angular work. Table tilts 45° down, 25° up. Belt attachment is good for straight line and general work. It's a favorite of patternmakers. Operates from light socket.

SELF-CONTAINED

GRINDER and POLISHER

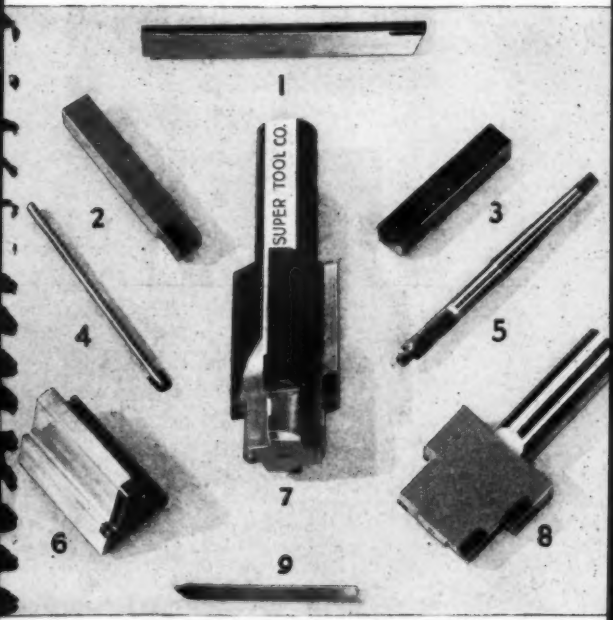
Cuts Production Costs 50%

. . . at Crown City Iron Works, Minneapolis. This horizontal belt surfacer and polisher is fine for finishing bronze tablets, aluminum and brass castings, etc. Unusual features for greater efficiency on work in its capacity.

Send Coupon No. 78 for Illustrated Bulletins

OLIVER MACHINERY CO., Grand Rapids Mich.

TECO TUNGSTEN CARBIDE TIPPED TOOLS



. . . *reputation earned by*

PERFORMANCE

1—Piston Grooving Tool. 2—Standard Turning Tool. 3—Square Nose Tool. 4—Porcelain Counterbore. 5—Combination Drill Counterbore. 6—Form Tool. 7—Four Fluted Step Reamer. 8—Flat Drill. 9—Glass Drill.

Super Tungsten Carbide Metals insure LESS BREAKAGE — MORE PRODUCTION—GREATER ECONOMY.

Send Quickmail Coupon No. 84 for Catalog, price list, and complete information.

SUPER TOOL COMPANY

356 EAST CONGRESS ST., DETROIT, MICHIGAN

PROCUNIER

HIGH SPEED PRECISION TAPPING ATTACHMENTS FOR YOUR DRILL PRESS

WITH THE NEW

"TRU-GRIP" TAP HOLDER

The most sensible tap holder that ever gripped a tap.

Features—BALL BEARINGS for accuracy, rigidity and long life. DOUBLE-CONE FRICTION CLUTCH for the smoothest most sensitive tapping you've ever seen. THREE-POINT BALANCED heat treated gear reversing mechanism which reverses the tap at twice the forward speed. THE NEW "TRU-GRIP" tap holder for the finest tap holder available.

Full details gladly supplied—use Quickmail coupon No. 13

Procunier Safety Chuck Co.
14 S. Clinton St., Chicago, Ill.

FREE TRIAL OFFER

Combination Drill Table and Vise

Patented

BUILT TO SAVE TIME ON DIFFICULT SET-UPS

A drill press without proper equipment is a dangerous tool. Many an operator has been injured on an angle piece like the one shown at right. The Combination not only holds such pieces firmly and safely, but is a great time saver on all kinds of jobs.

For full information on sizes and prices, just stick Coupon No. 57 on your letterhead and mail it to us.

30 DAY FREE TRIAL

Costs you nothing. If you are not satisfied in 30 days with the economies this tool makes possible, return it to us and we will pay the freight both ways.

MODERN MACHINE TOOL CO.
JACKSON, - - - MICHIGAN

ROSS Operating Valves

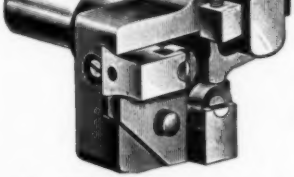
for the control of single and double acting cylinders

Poppet Type—Simple in design, lightning-swift in operation the speediest valve obtainable. Hand, foot and solenoid controlled types.

Send Coupon No. 32 for new Catalog.

Ross Operating Valve Company
6484 Epworth Blvd., Detroit, Mich.

• BOX TOOLS •



of SUPERIOR DESIGN For Use On B & S Automatic Screw Machines

A STURDY Box Tool constructed for hard usage, where fast speeds and heavy feeds are necessary without sacrificing close limits and fine finish. Of superior design and made of the finest materials—characteristic of all BANNER products.

The tool post is so constructed that the tool bit can always be adjusted to cut directly tangent to the stock while the tool bit is at right angles to the center line of the opposite roller block.

—Other— BANNER Products

Cams
Drill Holder Bushings
Ground Circular Form Tools
Knurls
Swing Tools
Tool Bits
Complete Set-Ups

Tightening the nut on the tool post forces the tool bit against the adjusting screw. There are adjusting screws on the two roller blocks, tool post and tool bit. All threads are standard. While intended for use on B. & S. Automatic Screw Machines, they are adaptable for use on other makes.

Many operators prefer the rollers to run on the outside of the work. To make this possible we furnish high roller blocks, eliminating the necessity of grinding the tool bit back to obtain the desired result.

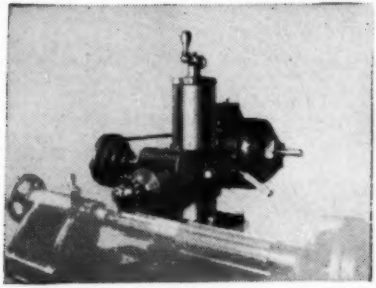
Complete Details in the BANNER Catalog

Use Quickmail Coupon No. 69

BANNER MANUFACTURING CO.
1873 Clybourn Ave., CHICAGO, ILL.

• *For BETTER WORK and MORE PRODUCTION* •

★ IT'S AMAZING!!!
The MASTER Lathe Converter ★



Easily and quickly attached to an ordinary engine lathe.

★

Does all milling operations such as: gear work, spline work, broaching keyways, hobbing etc. Grinding at all angles, internal or external.

No Dismantling of Lathe — Fits on compound same as your tool post. Not "Just Another Lathe Attachment"

USE QUICKMAIL COUPON NO. 74

The MASTER Geared Type Dividing Head ★

Fits into rear open end of lathe spindle. Has 40 to 1 reducing gear—counting indicators, three plates allowing 720 divisions. Collet furnished to fit your spindle.

MASTER MACHINE & TOOL CO.
NORTH KANSAS CITY, MISSOURI

ACE WELDERS

FOR DEPENDABLE PRODUCTION

ARC AND SPOT WELDING

ACE SPOT WELDERS adequately provide essentials to efficient, profitable spot welding service. They are designed to serve manufacturers and fabricators of sheet metal and wire goods; machine, sheet metal or repair shops—anyone interested in reducing costs. Spot welding is more economical than using rivets or bolts. Equipped with many labor saving features.

Dependable Spot Welders in sizes from 3 K. V. A. up

Priced as low as $85.00

A.C. ARC WELDERS with the ACE Exclusive Feature — SYNCHRO CONTROL

Portable, general purpose welders adaptable to individual requirements of manufacturers and repair shops, offering numerous advantages over gas welding, soldering and brazing. Performance equal to any well designed D. C. welder when used with a good grade of coated rod. The exclusive Synchro Control feature, covered by pending patents, provides perfect regulation of current and voltage comparable to D.C. welders. Made in sizes up to 250 amperes.

Priced as low as $135.00

Investigate economies possible with ACE Arc or Spot Welders.

Send Coupon No. 53 today for full details and prices.

PIER EQUIPMENT MFG. CO.

WELDING EQUIPMENT DIVISION

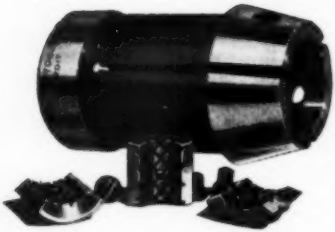
623 Cross Street, Benton Harbor, Michigan

All Styles and Sizes of

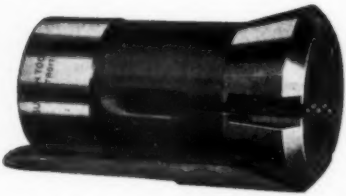
Sutton DIAMOND GRIP Collets

Grip Tighter under Less Tension

Single-piece collets with Diamond Serrations for all automatic and hand screw machines.



Standard Master-Type collets with Diamond-Serrated and Replaceable Pads.



Compensating Master with Diamond Serrated, Replaceable, and Self-Adjusting Pads for hot rolled stock.

Send Coupon No. 59 for Catalog No. 12 showing complete Sutton line of screw machine accessories.

SUTTON TOOL CO., 2836 W. Grand Boulevard, DETROIT, MICHIGAN

SOUTH BEND

UNDERNEATH BELT

Motor Driven **LATHE**

Model 117-C, South Bend Underneath Belt Motor Driven Lathe 16" swing by 6' bed including Equipment as shown **$869**

The New South Bend back-geared screw cutting Lathes are used in leading manufacturing plants and machine shops for work requiring the highest accuracy and precision in production and tool work.

SOUTH BEND LATHE WORKS
879 E. Madison St., South Bend, Ind., U. S. A.

CARRIED IN STOCK IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

C. B. Burns Machinery Co., 541 W. Washington Blvd., Chicago, Ill.
A. C. Colby Machinery Co., 183 Centre St., New York, N. Y.
Eccles & Davies Mach. Co., 1910 Santa Fe Ave., Los Angeles, Calif.
W. A. Voell Machinery Co., 1533 North 16th St., Milwaukee, Wis.
Reynolds Machinery Co., 2034 East 22nd St., Cleveland, Ohio.
The MacKenzie Machinery Co., 36 Oliver St., Boston, Mass.
W. B. Rapp Machinery, 132 No. Third St., Philadelphia, Pa.
Lee Machinery Company, 6318 E. Jefferson Ave., Detroit, Mich.
Cassell Machinery Co., 28 Edison Place, Newark, N. J.
Colcord-Wright Mach.&Supply Co., 1223 No Broadway, St.Louis, Mo.
Ogden R. Adams Co., 266 State St., Rochester, N. Y.
George T. Reynolds & Son, Inc., 171 Pine St., Providence, R. I.

SOUTH BEND *Precision* LATHES

New 14in. 4-Spindle "DELTA" DRILL PRESSES

$245.00

With Jacobs chucks, less motors.

Overall dimensions: 26" x 57"; 45" high. Table surface on base: 20¼" x 51". Oil trough 2", tapped for ½" pipe at rear. Maximum distance, chuck to table, 25½". Center to center distance of spindles, 11". Capacity of Jacobs chucks, No. 60 to ½" drills. Drills to center of 14" circle.

Spindle speeds, Nos. 1001 and 1002: 590, 1275, 2450 and 5000 r. p. m.
Spindle speeds, Nos. 1003 and 1004: 390, 745, 1280 and 2050 r. p. m.

Spindle carried on New Departure self-sealed ball bearings; lubricated at the factory for the entire life of the bearing. No further lubrication neccessary.

Send Coupon No. 29 for name of nearest Delta dealer and complete descriptive circular.

DELTA MFG. COMPANY

665 E. VIENNA AVE., MILWAUKEE, WIS.

"Use-Em-Up" SLEEVES

WITH A Positive DRIVE

Why wait until the tangs break off to appreciate the Scully-Jones "Use-Em-Up" Drive? Design your tools with this positive drive right from the beginning. Salvage those tools with the broken off tangs, by inserting them in "Use-Em-Up" Sleeves Satisfy yourself that this is one of the most efficient drives ever applied to any taper shank tool, with or without tang.

When ordering, consult our Standard Tool Catalog Number 105 for further information.

Send Coupon No. 40 for Catalog 105

SCULLY-JONES & COMPANY

1905 S. ROCKWELL -:- CHICAGO, ILLINOIS

MARSCHKE

Formerly Van Dorn, Black & Decker

HEAVY DUTY GRINDERS AND BUFFERS

THE SALESMEN and MACHINERY DEALERS who offer MARSCHKE GRINDERS and BUFFERS are in business for profit, but experience has taught them that profits depend more upon the service rendered than upon the size of commissions received.

Less experienced men are tempted to sell "a wider margin product" but the more reliable the sales organization, the greater its appreciation for the sales value of *dependable durability of machinery* and the freedom from "kick backs" in selling a quality product.

That is why they are selling MARSCHKE GRINDERS and BUFFERS—formerly made by Van Dorn, Black & Decker—now being manufactured by,

VONNEGUT MOULDER CORP.

1805 Madison Avenue, Indianapolis, Ind.

Send Coupon No. 47 for catalog showing machines with 10" to 30" wheels and 1 to 25 H. P. motors

A RANGE OF A MILLION VARIATIONS OF SPEED

BETWEEN THE HIGH AND LOW LIMIT

Instantly Available With The

NEW LENNEY VARIABLE SPEED TRANSMISSION

The Answer to Your Transmission Problem?

This handy unit is worth investigating for it HAS satisfactorily solved the transmission problem in many plants. It gives a smooth, quiet, vibrationless flow of power, adjustable to a fraction of a revolution per minute with reduction from 2 2/5 to 1 to 8 to 1. Speed is constant even under severe overload. The Lenney Automatic Loading Device prevents slippage. Neat in appearance, with quality construction—built for long life without attention. Can be set to any speed while running or idle.

Built in Motorized and Unit Types from ⅛ to 5 H. P.

Write Today for Complete Information and Prices

The LENNEY MACHINE & MFG. CO.
WARREN, - - - - - - - OHIO

● Territories Available to Agents of Proved Ability ●

THE KELLERFLEX RIGHT ANGLE ATTACHMENT

For use with any flexible shaft machine to reach otherwise inaccessible places; has 1 to 1 ratio; made in two styles, one for grinding wheels and the other for collet held tools such as burs, sanding drums (see illustration) with shanks up to and including ¼"; lapped spiral bevel gears keyed to shafts; double row ball bearings; special aluminum alloy housing; both driving and driven spindles hardened and ground. Use **Quickmail Coupon No. 66 for complete information.**

PRATT & WHITNEY
Div. N-B-P Co. **HARTFORD, CONN.**

HITCHCOCK'S
Machine Tool
BLUE BOOK

Selected Circulation — 25,000 Monthly

JUNE, 1937 — THIRTY-SECOND YEAR

Trend is Still Upward

The index of machine tool orders for April rose to 282. This is about 10% higher than the previous peak in December.

Domestic orders showed the remarkable gain of one-third over March. Foreign orders were higher than in March, but slightly under December.

Business continued good during the first half of May. In general, there was no indication of a let-up, although in some sections there was a slight slowing down because of labor disturbance and fears of adverse legislation.

The volume of machine tool orders, however, still remains abnormally high.

Published By

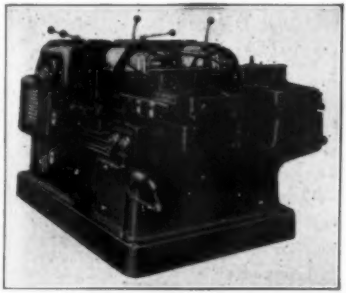
Hitchcock Publishing Co.

508 S. Dearborn St., Chicago, Ill.

Consult the Classified Finding Index for your requirements

Hydraulic Operated Machine for Turning Operations

The Landis Machine Company, Waynesboro, Penna., recently designed a hydraulically operated double spindle machine for turning operations. A series of experiments were conducted some time ago, in which a standard Landis lead screw machine was used for turning steering gear shafts. The threading dies were replaced by plain milling cutters in the die head.



The quality, so far as accuracy and finish were concerned, was so satisfactory that the possibilities in this new method of handling turning operations was immediately foreseen. The experimental machine was rather slow, and as production was an important factor, Landis engineers proposed the Lanhydro.

The Lanhydro is a semi-automatic hydraulic controlled machine designed to proceed through its entire cycle automatically with one tripping of the control lever.

In general, the appearance of the Lanhydro is similar to the Landmaco threading machine and all the tested mechanical features of the Landmaco have been retained. A special centering device for supporting the work during the turning operation has been added. This special centering device consists of a female center backed up by a long spiral spring to keep the pressure against the work constant. The center travels back through the spindle with the advancement of the carriage. By using the traveling center to support the work, concentricity between the head of the shaft and the turned stem is assured.

The hydraulic unit and its control valve are of par-

(Continued on Page 50)

DO IT—

Better—Faster—for Less!

with ODIN UNIVERSAL

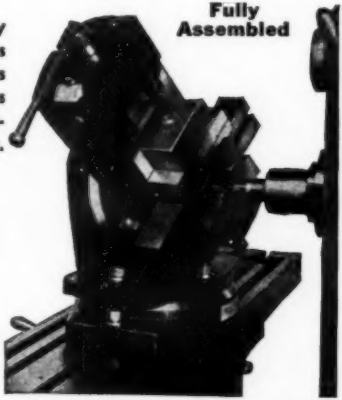
Precision Vises
Swivel and Plain

with Interchangeable Jaws and Hardened and Ground Parallels

They quickly pay their costs in savings on High Tool Costs —Expensive Fixtures —Patterns and castings—Extra Set-Ups.

Investigate the money saving possibilities of ODIN VISES

Send Quickmail Coupon No. 71 for full facts and prices.



Let us show you how to make cheaper and better jigs and fixtures at a greatly reduced cost—with a great saving in time.

ODIN UNIVERSAL CORPORATION
CHICAGO

Sales Division
110 S. Dearborn st.,

Telephone
Franklin 3281

ticular interest. A rapid feed is provided to carry the work to the turning head. A coarse turning feed is then used throughout the machining operation to a point within .008" to .010" of the shoulder. Where a shoulder must be faced, a very fine finishing feed is adjustable for any material or condition. The carriage advances under a finishing feed to a definite stop. A variable "dwell" time is then provided for the final clean up and to make possible the holding of extremely close limits in length from the end of the shaft to the face of the shoulder. After the "dwell" period, the turning head opens under hydraulic pressure and the carriage is rapidly returned to complete the cycle. The turning head automatically closes as the carriage returns.

Parsons-Merritt Layout Tables and Accessories

The Parsons-Merritt Company, Van Dyke, Mich., announce a new line of layout tables, both leg and bench types, together with angle plates and cubes.

The layout table is a complete unit, with an adjusting screw in each leg to suit any uneven floor condition and to hold table top in perfect alignment. Table top is 30"x 60" and has a 1" edge to permit the quick clamping of work to its surface. Table weighs approximately 1,000 lbs. Bench type is 16"x20" and weighs approximately 100 lbs.

Two sizes of angle plates are available, one 6x6x6 and weighing about 25 lbs., the other 6x6x12 and weighing about 40 lbs. Cubes are a standard size, 6x6x6, weighing about 25 lbs. All parts are carefully planed and commercially accurate.

For more complete details and prices write directly to the Parsons-Merritt Company, Van Dyke, Mich.

New! SKILSAW DISC SANDERS

TWO POWERFUL MODELS FOR HEAVY DUTY AND CONSTANT PRODUCTION SERVICE

SKILSAW

These two 7 in. SKILSAW Disc Sanders incorporate everything that is new in fine portable tool construction. Compact streamlined design, greater power, more engineering refinements! Compare every feature and you will choose one of these tools for all sanding and grinding now done by costly hand methods. *See them at your distributors! Send Coupon No. 16 for catalog.*

SKILSAW, INC.

3318 ELSTON AVE., CHICAGO

210 East 69th Street, New York — 19 Brookline Ave., Boston

1401 Spring Garden, Philadelphia

Here are the features

SKILSAW DI
SANDERS

STREAMLIN BODY — Smo trim design, per balance and lig weight make the easier to use. Comfortable handles give complete con under heavy sanding loads.

STRAIGHT-LI VENTILATION— Ass a cool-running tool. P are located to blow away from operator an prevent clogging. Effic air-filter protects com tator and motor from a sive dust and dirt.

POWERFUL MOTO Ample reserve power to in long life. Provides for f sanding and grinding.

SEALED BEARINGS — bearings, in all positions, fully sealed as a protec against dust and grease leak

BEVEL GEARING — St and quiet in operation.

ticular interest. A rapid feed is provided to carry the work to the turning head. A coarse turning feed is then used throughout the machining operation to a point within .008" to .010" of the shoulder. Where a shoulder must be faced, a very fine finishing feed is adjustable for any material or condition. The carriage advances under a finishing feed to a definite stop. A variable "dwell" time is then provided for the final clean up and to make possible the holding of extremely close limits in length from the end of the shaft to the face of the shoulder. After the "dwell" period, the turning head opens under hydraulic pressure and the carriage is rapidly returned to complete the cycle. The turning head automatically closes as the carriage returns.

Parsons-Merritt Layout Tables and Accessories

The Parsons-Merritt Company, Van Dyke, Mich., announce a new line of layout tables, both leg and bench types, together with angle plates and cubes.

The layout table is a complete unit, with an adjusting screw in each leg to suit any uneven floor condition and to hold table top in perfect alignment. Table top is 30"x 60" and has a 1" edge to permit the quick clamping of work to its surface. Table weighs approximately 1,000 lbs. Bench type is 16"x20" and weighs approximately 100 lbs.

Two sizes of angle plates are available, one 6x6x6 and weighing about 25 lbs., the other 6x6x12 and weighing about 40 lbs. Cubes are a standard size, 6x6x6, weighing about 25 lbs. All parts are carefully planed and commercially accurate.

For more complete details and prices write directly to the Parsons-Merritt Company, Van Dyke, Mich.

New! SKILSAW DISC SANDERS

TWO POWERFUL MODELS FOR HEAVY DUTY AND CONSTANT PRODUCTION SERVICE

SKILSAW

These two 7 in. SKILSAW Disc Sanders incorporate everything that is new in fine portable tool construction. Compact streamlined design, greater power, more engineering refinements! Compare every feature and you will choose one of these tools for all sanding and grinding now done by costly hand methods. *See them at your distributors! Send Coupon No. 16 for catalog.*

SKILSAW, INC.

3318 ELSTON AVE., CHICAGO

210 East 40th Street, New York — 52 Brookline Ave., Boston

1429 Spring Garden, Philadelphia

312 Crocker Account, Los Angeles — 1005 Webster Street, Oakland

Here are the features

SKILSAW DI SANDERS

STREAMLIN BODY — Smo trim design, per balance and lig weight make the easier to use. Comfortable handles give complete con under heavy sanding loads.

STRAIGHT - LI VENTILATION — Ass a cool-running tool. F are located to blow away from operator an prevent clogging. Effic air-filter protects com tator and motor from a sive dust and dirt.

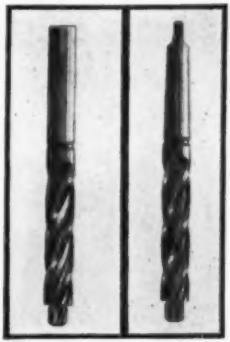
POWERFUL MOTO Ample reserve power to in long life. Provides for f sanding and grinding.

SEALED BEARINGS — bearings, in all positions, fully sealed as a protec against dust and grease leak

BEVEL GEARING — St and quiet in operation.

New Putnam Counterbore

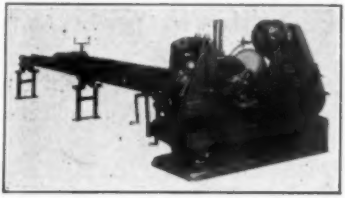
The Putnam Tool Company, 2983 Charlevoix Ave., Detroit, Mich., has recently introduced a new type of counterbore known as the Putnam "Hi-Speed" fast-spiral counterbore.



One of the principal features of this counterbore was developed for the purpose of permitting perfect seating of screw and bolt heads that might be slightly irregular in either shape or size. To eliminate the need for trimming or other work necessary to allow the head to drop into proper position, this new counterbore has diameters of both the cutter and pilot for body size holes that are 1/32" over listed sizes. To insure more efficient performance and longer life, the flutes are three times longer than those ordinarily used, and the chip clearance is greater in proportion to the diameter.

Cochrane-Bly Bar Handler Saves Time

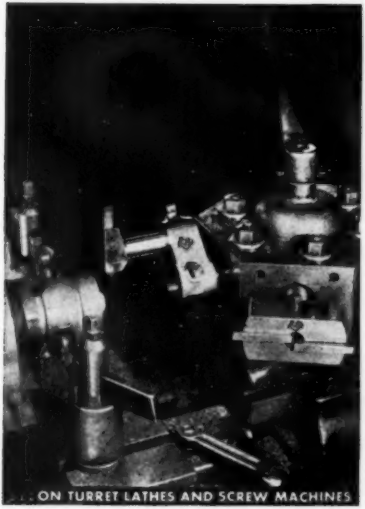
The Cochrane-Bly Company, Rochester, N. Y., have developed special handling apparatus for square and rectangular bars that will grip the bundle of bars on the end and feed them all the way up to the saw blade. As applied to their No. 55 sawing machine, here illustrated, the fixtures are designed to hold forty ¼-inch by 2-inch or twenty ½-inch by 2-inch cold drawn bars which are supported on rolls and held in the extended carriage which will reach over the bed of the saw



(Continued on Page 54)

ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE



The Trend is to Standard Shaped Cutters

From single cutters of standard shapes in ARMSTRONG TOOL HOLDERS . . . from tool room to the production department, come multi-purpose tools with cutters of standard high speed steel shapes to take the place of costly special tools. In selecting cutters for your ARMSTRONG TOOL HOLDERS for TURRET LATHE and SCREW MACHINE TOOLS, for any special gang tool you may devise, specify ARMSTRONG High Speed Bits and Blades. Each a fine tool in the rough, super-high-speed, individually hardened, tempered and tested, they permit greater speeds and feeds—continuous production at *full* capacity. So insignificant is their cost in production to the cost of machine and men hours they govern, that only this finest cutting steel can be truly economical.

Buy "ARMSTRONG TOOLS from your Supply House"

Coupon No. 6 will bring Catalog B-35.

Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U.S.A.

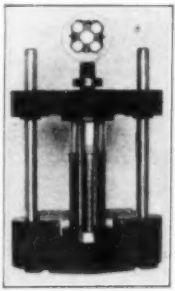
to the saw blade. The stock carriage is fed forward by a chain and sprocket operated by a crank handle.

The vise is air operated through a compound toggle link and is instantaneous in this movement, requiring less than five seconds to unclamp, feed the stock to the gauge, clamp and start the feed of the saw. The vise is provided with a lateral clamp to keep the bars in alignment. The bars are cut 2 inches long and to close tolerance in a cutting time of one minute fifteen seconds.

The apparatus is adaptable to the cutting of many other sizes and lengths of square and rectangular bars.

Simultaneous Broaching of Four Irregular Holes

The Colonial Broach Company, Detroit, Mich., submits an interesting set-up for simultaneous internal broaching of four irregularly shaped holes.



The broaching job to be done was on four holes in a harmonic balancer, shown above the broaching assembly in the accompanying illustration. These are broached in one operation on a standard Colonial utility press, with a production of some 200 parts per hour. The part is placed in the fixture. The ram travels down, pushing the broaches through the holes. It will be noted that at the top end of the broaches there are located a number of burnishers. These are .0003 inches higher than the broach cutters. They not only smooth the surface, but also provide clearance in the holes so that the broaches can be pulled back through the work on the return stroke.

The broaches are typical Colonial hardened and ground high speed broaches and the fixture which carries them is designed for quick removal and replacement. Although the broaches appear rather intricate in shape, they are designed so that they can be sharpened on a standard sharpening machine. Cutting speed is 30 feet per minute.

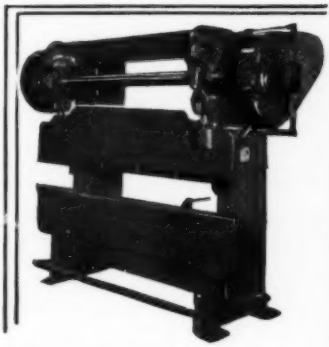
CAPACITY *to* BEND 96" of 10 GAUGE

the NEW BIGGER IMPROVED

Verson

ALLSTEEL JR. PRESS BRAKES LEAD THE FIELD

Investigate These Cost Reducers Now!



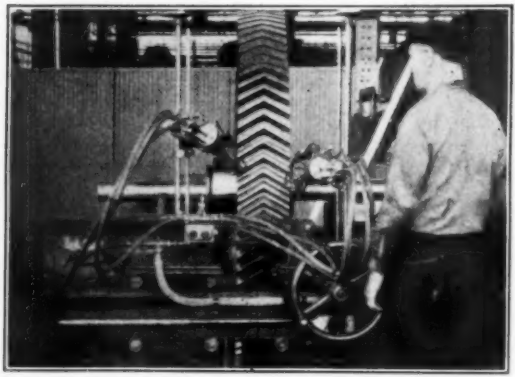
Complete information on request.

THE ALLSTEEL PRESS CO.

12017 So. Peoria St., CHICAGO, ILL.

Farrel-Birmingham Gear Hardening Machine

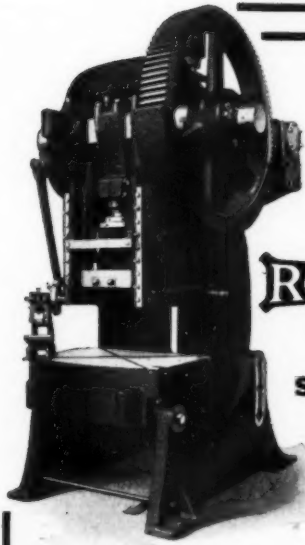
A new torch gear hardening machine which, it is claimed, will do four times as much work in a given time as an ordinary gear hardener, has recently been perfected and patented by the Farrel-Birmingham Company, Inc., of Buffalo, N. Y. It is designed not only to save time and labor but to reduce gas consumption and to offer such fine adjustments of burners and water jets that the desired depth and uniformity of hardness are exactly obtained.



While specially designed to harden double helical or herringbone gear teeth, this new machine is said to be equally efficient for hardening single helical or straight-tooth gears, splines of rolling mill wabblers, sprocket wheels and similar parts. It has two separate torch heads, and each head carries two sets of torches or tips. Therefore, both sides of the gear tooth and both helices of a double helical gear are hardened simultaneously.

In hardening double helical gears, one torch head of the machine starts hardening at one end of the tooth, while the other torch head begins at the other end. They travel toward the center or apex of the gear

(Continued on Page 58)



Built for

EXCEPTIONAL

SERVICE

ROCKFORD

INCLINABLE AND STRAIGHT SIDE PRESSES

in all sizes

THE ever increasing use of heavy sheet metal stampings nowadays in place of castings and the numerous parts formerly made on screw machines, requires presses of greater power and capacity, and that's just what you get in the ROCKFORD.

Rockford Presses are sturdily built of the best materials and incorporate many features that are the result of years of experience in building presses of various types. You can depend upon a Rockford—for it is designed to maintain exact adjustment throughout long runs and under heavy duty.

Write for Catalog

ROCKFORD IRON WORKS

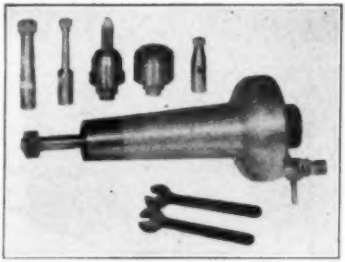
ROCKFORD, ILLINOIS

tooth on a horizontal traverse, but an ingenious device allows the torches to practically follow the helical trace of the teeth. This device is a guide roller on the torch carrier which engages the gear being hardened between two teeth and thus revolves the gear in correct relationship to the horizontal traverse of the torches. The traveling speed of the torches and attached water jet is regulated by a variable speed gear. It is generally from 6" to 10" per minute, according to the tooth size.

A single lever controls the pilot lights for igniting the torches and their gas supply. Water pressure from a 250-gallon tank is kept constant and at correct volume by a centrifugal motor driven pump, equipped with a relief valve and other necessary fittings. This overcomes the difficulty of variable water pressure commonly encountered. To enable the machine to handle any range of work, quickly adjustable burners of seven different sizes are supplied. Complete data may be secured by writing directly to the manufacturer.

Onsrud Redesigns Air Turbine Grinders

The Onsrud Machine Works, Inc., 3906 Palmer St., Chicago, Ill., announce their latest development, the E-1 air turbine grinder. They also state that they have completely re-designed and re-modeled their MD-1 grinder.



The E-1, shown in the accompanying illustration, develops ½ h.p. and 38,000 r.p.m. on 90 to 100 lbs. air pressure and is designed for the grinding of forgings, large dies, etc. The shape of this tool is such that it will fit easily into the operator's hand. The construction is very sturdy, the housing

(Continued on Page 60)

INCREASE PRODUCTION WITH
FEDERAL PRESSES

TIMKEN BEARING EQUIPPED

No. 33 BACK GEARED

Capacity 26 tons
Large area ram face
Large bolster plate
Large opening thru back for bulky work

Designed and built especially for large or bulky light work and for progressive dies such as used in lamination.

All models of FEDERAL heavy duty presses are equipped with Timken bearings to increase efficiency and production at the lowest possible upkeep cost. Roller bearings in the flywheel are adjustable for wear, eliminating the need for expensive rebuilding and repairs after long use and preventing damage to the clutch and control mechanism. Non-repeat safety type clutch and tripping device, also standard equipment on FEDERAL models, guard against accidents to operators or dies should momentum carry the crankshaft beyond center.

FEDERAL PRESS CO.
ELKHART, IND.

Send Coupon No. 68 for illustrated informative circular

being of duro-aluminum; the spindle of nickel steel, heat treated and ground and held to a close tolerance; the rotor is aluminum bronze. An advantage of the air driven type of grinder over the electric type is that the bearings are kept cold by expanded exhaust air—in fact, the air turbine grinders will operate continuously at less than the room temperature.

The lubricating system used is interesting, being of the centrifugal force type. The spindle is hollow and filled with fine oil and centrifugal action feeds this oil though resistance elements to the precision ball bearings in a film, thus assuring adequate and proper lubrication when the tool is running and none when it is idle, so there is no danger of overheating due to over-lubrication.

The MD-1 when originally put on the market met with some objections because of its sharp corners. This has been eliminated by changing the shape of this tool and it now fits into the palm of a man's hand. It is, in fact, "streamlined." This tool develops ¼ h.p. and 50,000 r.p.m. on 90 to 100 lbs. air pressure. Coupon No. 44 will bring complete details.

Skilsaw Introduces Two Disc Sanders

Skilsaw, Inc., 3318 Elston Ave., Chicago, Ill., announces two additions to its well known line of Skilsaw portable electric tools. These new tools are two models of Skilsaw 7" disc sanders, one for heavy duty and one for constant production service.

In appearance, construction and performance efficiency Skilsaw disc sanders are thoroughly modern. The smooth, trim, streamlined body design, the balance and lighter weight make them easier to use. Comfortable grip handles assure complete control under heavy sanding loads. An efficient air-filter protects the commutator and motor from abrasive dust and dirt. Straight-line ventilation assures a cool running tool. Ventilating ports are located to blow the dust away from the

(Continued on Page 62)

GETTING RESULTS

WITH GAIRING HOLLOW MIL

Send Coupon No. 62 for catalog

Longer service life with fewer interruptions and infrequent replac ment blades—that's what you get when you specify "Gairing A justable Blade Hollow Mills." Production moves along smooth and speedily, which adds much to profits.

Whatever your cutting tool problems may be, consult Gairin Engineers. Recent improvements in hollow mill constructio developed by our engineers, are materially lowering cutting to costs. We can be of great assistance to you in giving helpful advi on such problems.

Your local Gairing representative will be glad to tell you mo about this service.

Catalog No. 30, illustrated, will be mailed to responsible parti upon request.

THE GAIRING TOOL C

operator and to prevent clogging. The motor has ample reserve power to insure a long life and provide faster sanding and grinding. Ball bearings in all positions are fully sealed as a protection against dust and grease leakage. The bevel gearing is sturdy and quiet in operation.

Skilsaw 7" disc sanders are used for removing weld marks, rust and dirt from tanks, vats, etc.; for finishing tile, concrete, stone and marble surfaces; for sanding metals; smoothing steel and iron castings, beams and columns. The heavy duty Model "G" is 16¾" long, weighs 12½ lbs. Continuous production Model "L" is also 16¾" long but weighs only 14 lbs. Both models have aluminum alloy bodies, die-cast in a smooth, streamlined design.

Armstrong Wrenches Now Built for "Abuse"

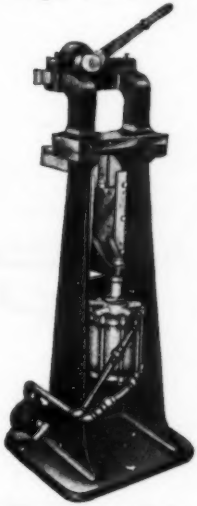
Wrench manufacturers have long complained that users abuse wrenches—put pipe over handles to increase leverage, or pound wrenches with hammers if the nut or cap screw will not give with the first pull. Now comes Armstrong Bros. Tool Co., 308 N. Francisco Ave., Chicago, Ill., with a new line of heavy duty, drop forged, alloy steel, box socket wrenches, not only built for "abuse," but equipped with "abusing" accessories.

Provided in this line which comprises "straight," "offset" and "angle" types with openings from 1¼" to 3½" are long tubular extensions that slip over the forged handle and permit leverages up to 30 to 1, and "striking sleeves" that are designed to protect handles when loosening or setting nuts in close quarters with a hammer or sledge.

HI-DUTY

PNEUMATIC MARKING MACHINE

This is a light, general purpose hand marking machine for use on flats, rounds and irregular surfaces, which is supplemented with an air cylinder to take the place of the foot pedal for applying pressure to raise the work table to the lettering tool. Air from the shop line is used and the four way foot valve assures fast operation. Machine uses solid flat or round dies, as well as adjustable type, in flat or knurl type holder.



Advanced business methods demand improved records of metal fabrications and this machine makes marking operations quick and simple. Part numbers — order numbers — manufacturer's name and other important data marked on your products will mean permanent records, to last the life of the part. This general purpose marking machine will help you.

Send Coupon No. 70 for complete catalog of our full line of Marking Tools, Machinery and Equipment.

Designed and Built By

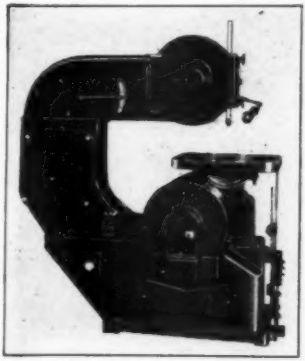
GEO. T. SCHMIDT, INC.,

1802 Belle Plaine Avenue, Chicago, Illinois.

Builders of Marking Equipment since 1895.

Grob Has New Open End Band Saw

A new open end band saw with a throat of 36", Type OS-36, has been placed on the market by Grob Brothers, Grafton, Wis. This machine, like the smaller model, is set up for internal sawing in 20 seconds since no brazing or welding of the saw band is required.

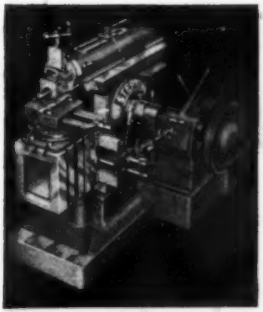


The open end band saw has proved to be equally well adapted on very small or delicate die work as well as on large and heavy work. The advantages on small work are obvious. The time for brazing the saw band for internal work is eliminated. Smooth cutting at all times is insured, since there is no bump such as is caused by a brazed part. For this reason the face of the saw band can be used as if it were a file, and the work can be finished to within .002" to the line. It is surprising how quickly intricate dies with small slots and corners can be finished this way.

However, the open end band saw is of equal advantage on large work. This is due to the positive drive to the saw band, an exclusive feature of this machine. All other types have a friction drive to the saw band. The positive drive naturally provides faster cutting than a friction drive and this feature combined with the other advantages mentioned, makes the machine suitable for sawing large jobs. The large throat is obtained by means of a third 20" diameter pulley mounted on a swivel block in the upright column of the frame. Since the saw band is driven positively, this arrangement is fully satisfactory, and has none of the disadvantages that are encountered with friction driven band saws when using a third pulley.

(Continued on Page 66)

POWERFUL MACHINES
for HEAVY WORK

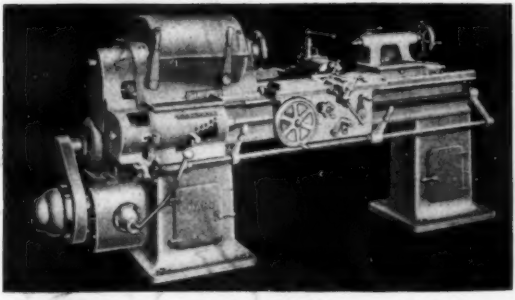


STEPTOE SHAPERS

Force feed continuous lubrication, heavy construction and Timken bearings throughout insure rigidity, accuracy and long life. Centralized controls are within easy reach of the operator at all times.

Instantaneous feed and speed changes may be made with fingertip control while the machine is running.

Send today for catalog No. 130.



CHARD Twelve-Speed All Geared Lathes

Precision Timken or plain bearing spindle—Instantaneous start or stop of spindle—12 speed changes in 15 seconds—Heat treated and hardened gears run in oil in speed box—All shafts mounted on ball bearings—Powerful, accurate, and easy control—Built in 16", 18" and 20" standard engine lathes, manufacturing lathes and tool room lathes. ● *Send today for full information.*

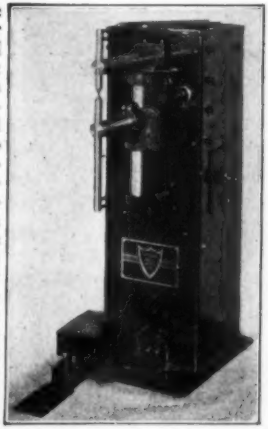
Western Machine Tool Works

HOLLAND, :-: :-: MICHIGAN

By means of a hand lever on the left of the machine the upper guide pulley is raised and lowered and proper tension to the saw band is provided. The sawing table, 24"x28", is tiltable in two directions. Distance from floor to table, 27". Total height is 80". The machine occupies 24"x60" floor space and its total weight is 3000 lbs.

Taylor-Hall Spot Welder

A new spot welder, said to be radically different from the conventional type of foot operated welder, is announced by the Taylor-Hall Welding Corporation, Worcester, Mass.



This new welder differs from others in that the movement of the upper electrode is in a vertical plane and not on the arc of a circle. This allows accurate and easy alignment of electrodes and hence, two welds (up to the capacity of the machine) may be made simultaneously. The transformer and upper horn assembly are used as the pressure unit with an easily adjustable counter weight for light and medium heavy work. This obviates the use of the usual inaccurate spring for pressure and at the same time develops more than the usual available pressure. The foot treadle leverage is 3½ to 1, so that even though greater pressure is available, less manual effort is necessary. (The usual leverage is never more than 2 to 1, and rarely more than 1 to 1).

A new design of rocking step plate located on the end of the treadle operates the switch. This eliminates 50 to 75% of the usual foot movement and allows the welder to be operated 30 to 50% faster than con-

(Continued on Page 68)

BANISH these Imps of Motor Destruction

¼ H. P. to 15 H. P.

Use Quickmail Coupon No. 23 for catalog of complete line Hammond Grinders

HAMMOND of KALAMAZOO ELECTRIC GRINDERS With Totally Enclosed Motors

Hammond Machinery Builders INCORPORATED

KALAMAZOO, MICHIGAN, U.S.A.

Eastern Branch: 148 W. 23rd St., New York

ventional types, including motor driven machines. A turnbuckle adjustment for foot treadle height is provided so that when flat stock without flanges is being welded, the movement of the upper electrode need only be sufficient to release the work. Ease of operation, rigidity and long life of moving parts are assured by the use of grease filled and sealed roller bearings, front and back, and long guides bearing against oil impregnated maple wood gibs on each side. The weld is made as the foot is *raised,* which eliminates pounding at high speeds.

"Oliver" Metal Spinning Lathes

The "Oliver" metal spinning lathe, a product of the Oliver Machinery Company, Grand Rapids, Mich., is designed to spin sheet steel, copper, bronze, brass, aluminum, German silver, galvanized iron, pewter, etc. Its principal use in industry is to make samples prior to making dies or, when the quantity to be produced does not warrant the expense of dies, to turn out the work itself.

The ball bearing, variable unit, motor driven headstock can be adjusted to any speed from 800 r.p.m. to 2400 r.p.m. as required. Enclosed dial operated switch has overload protection. Front bearings of the 12" lathe are finest ball type, on the larger lathes, roller bearings.

Motor and bearings are guaranteed to hold up to 2000 pounds pressure. Headstock has 6" faceplate.

(Continued on Page 70)

END MILLS
for All Purposes

PROGRESSIVE

The standard line of Progressive Shear Cut End Mills contains a tool for practically every job. They are guaranteed to give accurate and economical service, for careful attention is constantly given to insure their accurate workmanship and the quality of all materials.

SHEAR CUT

END MILLS

Send us your blue prints on special end mills. Years of experience in their design and manufacture is at your disposal without obligation. We can give you good prices and quick deliveries.

Write for a copy of the Progressive Catalog
Use Quickmail Coupon No. 58.

PROGRESSIVE TOOL & CUTTER CO.
FERNDALE, MICHIGAN

The spindle is made of high grade steel, is 1½" in diameter and has ½" hole its entire length to facilitate removal of centers. Inside end is threaded for faceplates and bored to receive No. 2 Morse taper shanks. Outside end carries "Oliver" patented combined handwheel and faceplate for holding the spindle for removing front faceplates, for use as a rear end faceplate, for turning spindle by hand when making adjustments, or for quickly stopping motor.

The specimens of metal work illustrated here were done by students of Central High School, Grand Rapids, Mich., under the supervision of Harry M. Dexter, instructor. While some hand work was required in the finishing of these specimens, the basic elements of these designs were executed on "Oliver" spinning lathes.

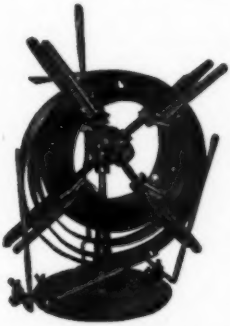
"Oliver" spinning lathes are built in four sizes. 12"x4', 16"x6', 20"x6' and 24"x7', and come equipped with fully enclosed ball bearing variable speed unit type motor driven headstock with dial control, outside handwheel, adjustable pivot rest and rest socket. live tail center, 6" faceplate for holding forms, combined rear end handwheel and faceplate, built-in positive spindle lock, knock-out rod, faceplate wrench and five spinning tools. Complete specifications may be obtained by writing directly to the Oliver Machinery Company.

The Spring issue of "Wood-working Machinery Methods", the quarterly published jointly by the Mattison Machine Works and Greenlee Bros. Co., both of Rockford, Ill., is now ready for distribution and will be mailed on request to any executive interested in up-to-date wood-working practice.

FASTER And More ACCURATE BLANKING with

LITTELL

Automatic Centering Reels



Littell automatic centering reels enable one man to load and center heavy coils in less than two minutes regardless of the difference in inside diameters between one coil and the next. Centered coils turning on ball bearings revolve with the greatest of ease. This condition means greater production for both hand feeding and automatic feeding of stock.

These reels are made in three sizes, in both plain and motor driven types.

No. 3 for 300 pound coils.
No. 5 for 600 pound coils.
No. 10 for 1000 pound coils.

Write today for circulars showing types and sizes of LITTELL automatic centering reels.

Use Coupon No. 79 when you send for Littell circulars.

F. J. LITTELL MACHINE CO.

4125 Ravenswood Ave., Chicago, Ill.

Manufacturers of Punch Press Feeds and Reels

Carboloy Film Shows Rapid Grinding Method

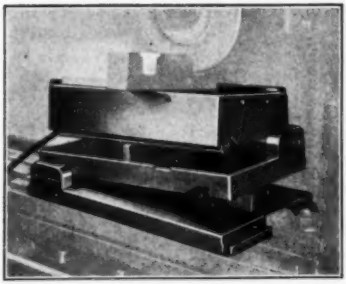
Supplementing their grinding demonstrations of 1936, Carboloy Company of Detroit, Mich., recently released a sound slide film showing their new, rapid technique for grinding Carboloy tools. It is reported that up to May 1st, over 2,000 people, representing 170 firms, had seen this film.

The 124 pictures in the film dramatically present the correct and incorrect methods of grinding Carboloy tools and the proper equipment for correct grinding. Not only does this film describe technical details of interest to tool grinding operators but also, due to the broad benefits and economies which are clearly shown, it is of especial interest to production and administrative executives as well. After the completion of its western schedule of showings, the Carboloy Company will make the film available to Engineering Societies, Foremen's Clubs, Purchasing Agents' Associations, as well as additional plants interested in obtaining the benefits of this new rapid grinding technique. Requests for this sound slide film may be addressed to Carboloy Company, Inc., 2985 East Jefferson Ave., Detroit, Mich.

MACHINE SHOP OPERATIONS. Compiled by J. W. Barritt. 850 pages, 8½x11 inches. Published by American Technical Society, Drexel Avenue at 58th St., Chicago, Ill. Price, $5.00.

280 actual jobs, covering the lathe, milling machine, slotter, horizontal boring mill, shaper, drill press, planer, vertical boring mill, measuring tools, bench work, floor work and layout work are included in this book, and are typical of the hundreds of major opera-

(Continued on Page 74)



Automobiles, Cash Registers or Watches . . . the MAGNA-SINE Proves Its Worth!

In the grinding departments of almost every automobile plant the MAGNA-SINE is in daily use. The world's largest manufacturer of cash registers has found it a time and money-saver. And one of the best known makers of fine watches — with whom precision accuracy is of utmost importance — has been using the smallest model MAGNA-SINE for months!

Regardless of the type of product, if any grinding job requires an angular set-up—either single or compound—the MAGNA-SINE makes that set-up possible in only a few seconds time. Precision accuracy is positively assured. Guaranteed magnetic efficiency eliminates all need for angle plates, clamps and bolts. There are no screws or nuts to tighten or loosen.

The MAGNA-SINE is more than paying for itself in the hundreds of shops where it is being used.

If you are interested in convincing facts use Quickmail Coupon No. 63 It will bring you complete information!

The MAGNA-SINE

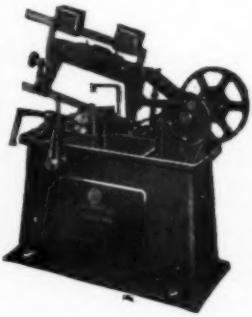
ROBBINS ENGINEERING COMPANY

639 MT. ELLIOTT AVE., DETROIT, MICHIGAN

tions which a skilled mechanic is called on to do. In connection with each job, the tools needed are listed and then in a step-by-step manner the job is explained, accompanied by pen and ink illustrations. At the end quiz questions are given for review. The job tickets come in a screw post binder, bound in maroon colored grain fabrikoid, and any series of jobs can be removed if desired. J. W. Barritt, the compiler of this book, is a member of the American Society of Mechanical Engineers, and was formerly Supervisor of Apprentices at the Westinghouse Electric and Manufacturing Co., Philadelphia, Penna.

New L-W 6x6 High Speed Power Saw

The L-W Chuck Co., 1-7 No. St. Clair St., Toledo, Ohio, announce a new high speed power saw having a capacity of 6"x6", which is said to be highly efficient and accurate in operation.



The saw frame is designed so that maximum rigidity is obtained. The sliding bearing is dovetailed to fit the arm and is adjustable in all directions. Coolant pump is located inside the base, making a compact and clean assembly. An automatic trip is provided which stops the machine on completion of cut and the saw blade is automatically relieved on the non-cutting stroke. A new feature is the automatic relieving device. To start cut, release weight of saw frame, hold down on release lever and lower saw to work, start machine—and the rest of the operation is automatic. Other features include: gravity feed; length gauge; and expanding clutch.

Oliver Instrument Company, 1408 Maumee St., Adrian, Mich., have just issued a bulletin, illustrating and describing their universal tool and cutter grinder. They will be pleased to send a copy to anyone interested. Write them at the address given above.

EASY ENGAGEMENT

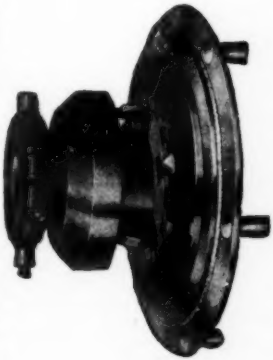
INSTANT RELEASE

DRAGFREE IDLING

ABUNDANCE OF POWER

—that's the

CONWAY CLUTCH



Specify the Conway if you are looking for the last word in friction clutches. Fewer parts, perfect balance and smooth centripetal action have brought more dependability, greater power and longer service to every assignment.

Ask for Catalog P-20 and Bulletin E-8, with full details of the Conway Expansion Clutch.

THE CONWAY CLUTCH CO.

1541 Queen City Ave. **Cincinnati, Ohio**

Patented in U. S. A. and Canada

"The Conway Disc is a Splendid Clutch"

Dalrae Introduces Midgetmill

The Dalrae Tools Company, Syracuse Building, Syracuse, N. Y., announce an addition to their line of Speedmills. The new unit has the high speed spindle housed in a hardened and ground quill, having a 2½" travel.

Boring and drilling feeds are obtained with hardened worm and bronze worm wheel with internal screw thread which fits accurately a ground screw thread on the quill. Extreme smoothness of feeding action is claimed. The ground steel sleeve and quill members give added rigidity that eliminates chatter and vibration under maximum cuts, regardless of spindle position. Other features common to the standard Speedmill—balanced design, flywheel type of spindle pulley, spindle lock, ejector rod, self-contained plumb bob, single mounting for compound angles, light weight characteristics—have been retained.

An ingenious depth stop that "clicks" a warning when desired depth is reached, replaces the usual solid depth stop, thereby effectively eliminating cramping precision ball bearings. It is claimed that exceedingly accurate settings are possible. A standard 40 threads to the inch micrometer dial of large diameter for setting is precision built and dependable.

DRILLS - DRILLS AND MORE DRILLS

Every Shop has its Drilling Problems and Drills to Grind

For profitable drilling, drills must be **correctly** ground, **accurately** ground and **quickly** ground, with a High Efficiency Drill Point.

You can get all these requirements **ONLY** in the **OLIVER OF ADRIAN DRILLPOINTER**—Available for Bench or Pedestal operation and for drills No. 57 to 4½".

The cut illustrates our bench machine, hand operated, with ball bearing spindle, self contained type, and with numerous features found only on the OLIVER. May we send you our literature describing OLIVER DRILL GRINDERS?

NO OBLIGATION

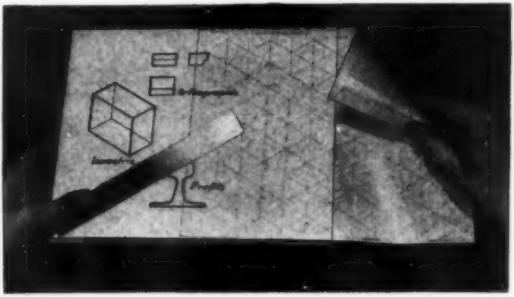
USE COUPON No. 17

OLIVER INSTRUMENT COMPANY

1408 EAST MAUMEE ST. ADRIAN, MICHIGAN

New Sketch Pad Set

The new sketching set illustrated, recently introduced by the Wade Instrument Co., consists of a pad of blank tracing paper, a two-faced printed guide plate and a thin steel straightedge. This new device will make any type of drawing to any scale, either freehand or with the straightedge.



The guide plate, which slides under the top sheet of the transparent paper pad, is printed in blue ink to show an isometric design on one side, with all three axes spaced one inch and divided with small dots at every half and quarter inch. Full scale is numbered at the top and one-half scale at the bottom, so that any subject may be drawn to scale, with views of all six sides and the interior.

The illustration shows how this is done.

The reverse side of the guide plate is printed with eighth-inch divisions, each inch-line being numbered and each half-inch line heavier than the others, so that orthographic, profile and plan sketches may be made quickly to any scale. The guide sheet is buff color and has thin sheets of clear "Doplex" cemented to both sides, making it moisture, dirt and crackproof. It is strong and easily cleaned.

The pads are made of strong, clear tracing paper thin enough so that two carbon copies may be made under the guide plate at the same time as the original. It also makes clear blueprints. The pads are

(Continued on Page 80)

WITTEK
AUTOMATIC
Roll Feeds

For Every Size and Make of Punch Press

FAST
ACCURATE
AUTOMATIC
SAFE

Prevent Punch Press Accidents

One sudden accident may wreck a year's profits on a particular machine. Protect yourself and your operators by installing Wittek Automatic Roll Feeds. They feed automatically any stock from coils in lengths from 0" to 24" per press stroke and increase production at a saving in time, operating costs and dies. Single roll, double roll and compound type with straightener are easily installed on any make of punch press without alteration.

Wittek Reel Stands

Automatic, Self-Centering, Ball-Bearing. Adjustable to any height, balanced at any angle, 500 lb. capacity. Prompt deliveries from stock. Also made in four other models.

Write today for Bulletin "HF" giving complete details and specifications of WITTEK Automatic Roll Feeds and Reel Stands.

Use Quickmail Coupon No. 25

WITTEK MANUFACTURING COMPANY

4305-9 W. 24TH PLACE . . . . . CHICAGO, ILL.

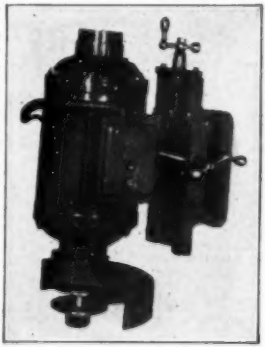
sealed on three edges with a flexible rubber gumming that prevents any shifting of either the guide plate or the top sheet while drawing.

The straightedge is used to part finished sketches from the pad, and a thick card back makes the pad nearly as stiff as a drawing board.

These sketch pad sets are available in three sizes: 5½ by 8½, 8½ by 11 and 11 by 17 inches, each with guide plate and straightedge to match. For prices and other information, address your request to the Wade Instrument Co., 1663-A East 118th St., Cleveland, Ohio.

Standard Vertical Angle Plate Grinder

The Standard Electrical Tool Company, 1952 West Eighth St., Cincinnati, Ohio, announce that their vertical angle plate grinder is now furnished with vertical and horizontal feeds, as illustrated.



The vertical angle plate grinder was designed for application to a planer, boring mill or other machine tool and has unlimited applications, such as the grinding of knives, dies, etc. The machine is available in sizes from 2 h.p. to 10 h.p., with speeds of 3600, 1800 or 1200 r.p.m., depending upon the diameter wheel to be used. When the machine is used on a planer or boring mill a cup wheel is mounted. The design of the grinder takes care of the necessary end thrust and the weight of the shaft, as the spindle is ball bearing equipped.

Construction of the machine when fitted with both vertical and horizontal feeds is such that if the application necessitates the use of only one feed, the intermediate feed may be removed and the dovetail slide having a mounting pad may be placed in the dovetail of the motor housing, the feeds being interchangeable.

SAVE TIME! GET BETTER RESULTS!
INCREASE YOUR PROFITS!

with a

Mall UNIVERSAL GRINDER

More horsepower per pound of weight in the operator's hands than any other grinder on the market.

It will pay you to investigate this PORTABLE, EFFICIENT, HIGH SPEED machine for grinding and casting snagging. Also, inquire about the various other MALL grinders. There is a type for every job!

Use Quickmail Coupon No. 46

MALL TOOL COMPANY
7742 South Chicago Avenue
Chicago, Illinois

Offices and Distributors in all Principal Cities

Wyco Model 43T Flexible Shaft Grinder

Wyzenbeek & Staff, Inc., 642 Washington Blvd., Chicago, Ill., manufacturers of the Wyco line of flexible shaft machines are offering the trade a new high speed, heavy duty, flexible shaft grinder.

This new machine is known as Wyco Model No.

43T. It is designed to drive the new type of Bakelite bond grinding wheels at a top speed of 6000 r.p.m. It has a 1 h.p. motor which may be ordered in single phase repulsion induction type or three phase. Through the use of a V belt drive, 3 speed changes are instantly available, 1800, 3600, and 6000 r.p.m. The flexible shaft is 7' long and has the patented Wyco non-metallic inner liner. This feature combines light weight and long life in flexible shaft construction, it is stated. The Model 43T machine is mounted on a Wyco roll-easy truck carriage for smooth rolling over bumpy or unfinished flooring. It is particularly suitable for heavy work in foundries, welding shops, ship and railroad shops. For more complete information, write to Wyzenbeek & Staff at the address above, for a copy of their latest catalog which will be sent you without obligation.

DRILLING MACHINES

FORMERLY manufactured by Rockford Machine Tool Co., of Rockford, Ill., thousands of these drills have been installed in plants the country over, where they have been giving universal satisfaction.

Counterbalanced, eight-speed spindle, made from high carbon special steel, has quick advance and return; positive feeds are instantly available while machine is in operation; all controls within easy reach.

14"-20"-21" Stationary Head

24"-28"-32" 36" Sliding Head

* * *

Belt or Motor Drive

Write for Complete Details

POWERFUL—SIMPLE—DURABLE—ACCURATE

We have been builders of Drilling Equipment for more than 20 years and, in addition to the above drills, manufacture the Cleereman Automatically Oiled, Anti-Friction, High Speed Drilling, Boring and Tapping Machines; Gang Drills and Special Drilling Machinery.

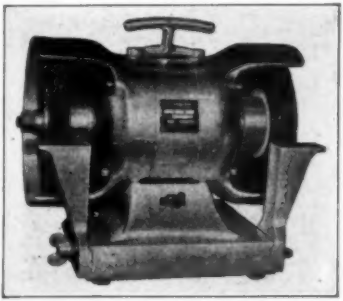
CLEEREMAN MACHINE TOOL CO.

GREEN BAY, WISCONSIN

(Formerly Green Bay Barker Machine Tool Works)

New Black & Decker 6" Bench Grinder

The Black & Decker Mfg. Co., Towson, Md., announce a new 6" Junior ball bearing bench grinder. Sturdy and well balanced for practical shop use, it is well proportioned and handsomely finished in brilliant aluminum.



It is powered by a standard Black & Decker constant speed motor of ¼ h.p. rating (except 25 cycle, which is 1/5 h.p.) and can be obtained in all standard a.c. single phase voltages and cycles and is fully equipped with ball bearings, which are protected against dust and dirt by special bearing sleeves. The generous-sized wheel guards are made extra strong by the use of a new alloy which combines lightness with high tensile strength. Ample room is provided for the use of wire wheel brushes. The strong, full size tool rests are firmly locked in base grooves, but are easily adjusted to compensate for wheel wear.

The grinder may be bolted to the bench or moved to convenient locations by means of the carrying handle, where the four rubber feet will act as stabilizers. Included as standard equipment are one fine and one medium wheel (each being full size, 6" diameter x ⅝" face x ½" hole); also a 3 conductor cable (2 leads and 1 ground connection). Total net weight is 31½ lbs.; overall spindle length 12¼"; height to center-line of spindle 5½"; total height 10". Coupon No. 77 will bring complete details.

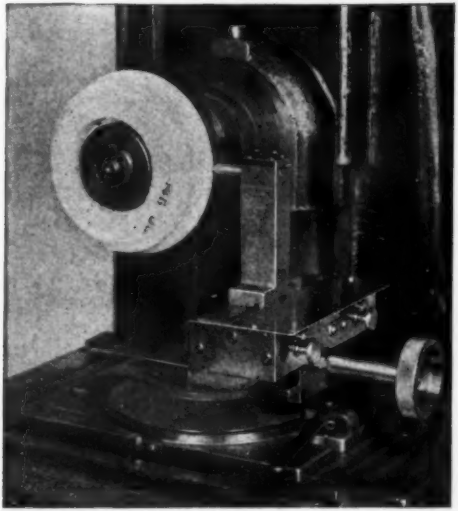
The latest illustrated bulletin and price list on their line of automatic knife and saw grinding machinery is now available from Samuel C. Rogers & Co., 191 Dutton Ave., Buffalo, New York. A copy will be mailed to you free on request.

The Vinco Angle Tangent to Radius Dresser

for

Internal, External and Surface Grinding Machines

Patented June 5, 1934, Other Patents Pending



Dressing Angles and Radii on a Surface Grinder

One of the outstanding features of The Vinco Dresser is the basic patented principle of dressing angles and radii from the same axis without moving the diamond. Angles and radii are always tangent. Radii dressed are accurate, for the Index Plate rotates on precision hardened steel balls. The balls are assembled under load and travel in a hardened and ground race. Angles are always accurate because the Index Plate and Vernier are graduated on a Vinco Master Dividing Head to a one ten thousandth of an inch accuracy. The Vinco Dresser is precision made of the finest materials by highly skilled mechanics. Dresser parts subject to wear are hardened, rough ground, normalized, finish ground and lapped. Adjustable stops on the index plate permits the setting of the Dresser at any desired angle for production grinding. It saves 75% in dressing costs and eliminates all worry and uncertainty in dressing angles and radii on abrasive wheels.

Send Quickmail Coupon No. 48 for Descriptive Circular

VINCO TOOL COMPANY

7348 CENTRAL AVE., DETROIT, MICHIGAN

Hamilton Mill Cut Rotary Files

Illustrated below is a group of Hamilton mill cut rotary files, made by the Hamilton Tool Co., Hamilton, Ohio. Used in flexible shafts, drill presses and milling machines they are intended for burring finished machine parts, die sinking, engraving, barbering dies, removing excess welds, finishing brass and aluminum castings and for work on marble, bakelite and wood.

The files are made in 22 standard shapes, numbered from 51 to 72. Each shape is obtainable in five standard cuts as follows: No. 1 is coarse, has no chip breakers and is best suited for wood, lead and other soft materials. No. 1A is coarse, has chip breakers and is best suited for aluminum, bakelite and marble. No. 2A is medium, has chip breakers and is best suited for mild steel and iron. No. 3A is fine, has chip breakers and is best suited for high tensile steel and bronze. No. 3AA is as fine as A3 cut, but has a greater number of chip breakers and is best suited for cast iron.

The speed at which these files are most efficient varies from 800 to 5000 r.p.m., depending upon the material to be cut and the diameter of the file. Complete information may be obtained by writing directly to the manufacturer.

A Correction

The Brown & Sharpe Manufacturing Co., Providence, R. I., has requested that we correct an error made in the May issue of The Blue Book in an article describing a new line of B. & S. milling machines.

The machines have 16 feed rates, 11/16 to 26 inches per minute longitudinal and 9/32 to 10⅜ inches per minute transverse and vertical instead of 9/32 to 26 inches per minute transverse and vertical as described.

Readers who are interested in these milling machines are requested to refer to the article with this correction in mind.

Here's your pass to SMALL TOOL *economy*

•

STEEL BURS
and DRILLS

•

ABRASIVE
POINTS
DISKS
WHEELS

•

ROTARY
FILES, etc.

•

Your name and address on the ticket below will bring a copy of Catalog TA illustrating and describing

S. S. WHITE
SUPER-QUALITY
CUTTING and GRINDING TOOLS

When you mail it in, you will be taking the first step in cutting your small tool expense, because these tools will give you more hours of service than ordinary tools although they cost no more. Best materials, accurate construction and over half a century of manufacturing experience are the reasons. S. S. WHITE Tools will mean better work too, because they cut fast, true and retain their cutting edges. FILL IN AND MAIL THE TICKET—TODAY.

ONE WAY TICKET TO *SMALL TOOL* ECONOMY

The **S. S. WHITE** Dental Mfg. Co.
INDUSTRIAL DIVISION
10 East 40th St., Room 2310H, New York, N. Y.
Good for a copy of CATALOG TA with prices

NAME .....

ADDRESS .....

CITY ..... STATE .....

The Box You Want Is Always "On Top" with Stackracks!

STACKRACKS save time spent piling and unpiling boxes or stock. Every box is always accessible in these individual racks or heavy steel that lock together into a unit of any size or shape. Shop boxes slip into them like drawers in a file cabinet.

STACKRACKS are built to any size to fit your shop boxes. They are assembled into units without using any tools. No matter how high they are stacked or how heavy their load, the patented construction of STACKRACKS assures a positive lock which holds the units tightly together. They are built of channel and formed steel, strongly welded and finished in baked-on enamel.

Send the Coupon today for the whole story of STACKRACKS. It costs you nothing to find out how STACKRACKS can help you.

STACKBIN CORP.

Patented

PROVIDENCE, RHODE ISLAND

Stackbin Corp.,
55 Troy St.
Providence, R. I.

Send me information on STACKRACKS. The size of my boxes is.....

Name.....

Firm.....

Address.....

DO DUAL ALL

CONTOUR MACHINING SAVES FOR YOU

THICK DIES

By machining out the die slug with the DOALL Contour Saw—sawing at an angle—the slug may be used as the punch. On the same DOALL machine the excess material may be filed off to make the land on the die and the straight sides on the punch. The sawing time on the 3" thick trimming die illustrated was 1 hour and 45 minutes.

MANY OTHER DOALL USES

"We have found three times as much work for the DOALL as we originally thought we would have."—R. H. Etter, Oliver Farm Equipment Corporation.

"We have had occasion to use the DOALL on quite heavy work and found that cutting steel 4" square by 24" long was an easy matter."—Carl M. Friden, Friden Calculating Machine, Inc.

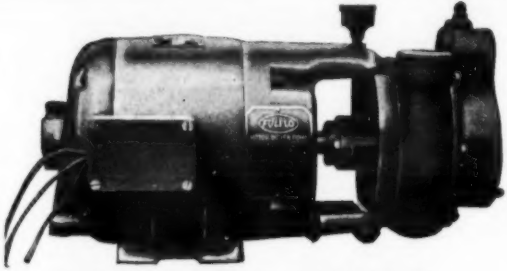
TAKE THE JOB RIGHT THROUGH

1. Write for advance announcement of the DOALL Metalmaster Models M and MD.
2. Send Coupon No. 65 on business letterhead for free copy of Contour Sawing Handbook.

CONTINENTAL MACHINE SPECIALTIES
1301 South Washington Avenue
MINNEAPOLIS - - MINNESOTA

TRADE MARK
"FULFLO"
REG. U.S. PAT. OFF.

- QUIETNESS
- RELIABILITY
- MAXIMUM PERFORMANCE



CENTRIFUGAL COOLANT PUMPS

THESE UNITS CAN BE MOUNTED IN ANY POSITION

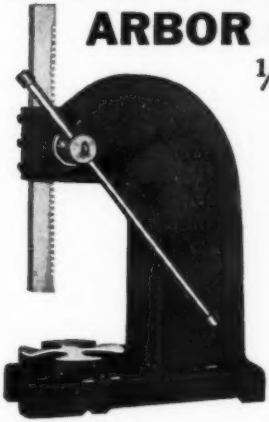
AG3M	¼ H.P. BALL BEARING MOTOR	25 G. P. M.	10 FT. HEAD
AG4M	⅓ H.P. BALL BEARING MOTOR	35 G. P. M.	10 FT. HEAD
AG5M	½ H.P. BALL BEARING MOTOR	50 G. P. M.	10 FT. HEAD
AG6M	¾ H.P. BALL BEARING MOTOR	70 G. P. M.	10 FT. HEAD

FULFLO SPECIALTIES CO., INC.
BLANCHESTER, OHIO

HIGHER QUALITY FAMCO LOWER PRICES

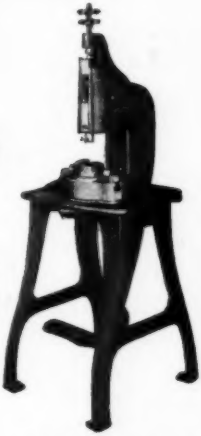
ARBOR PRESSES

½ to 12 Tons



Years of experience and a thorough knowledge of requirements are embodied in Famco Arbor Presses. Made from highest quality materials by skilled workmen whose precision and attention to every minute detail assure you of a press that will give the utmost in service. With a Famco you can rely on steady, efficient operation over a long period of time, with consequent savings in operating and maintenance costs.

FOOT (KICK) PRESSES



Made in 3 sizes: 3" — 6" — 10"

Designed for a wide range of requirements, Famco Foot Presses are made to meet a high standard of quality. Sturdily constructed, they give unlimited, trouble-free service. Adjustable stroke and foot pedal assure rapid work. Furnished complete with die-block, die-holder and chuck.

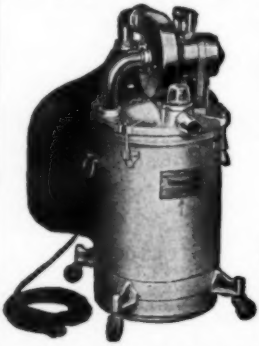
AT YOUR DEALER'S
Or send Quickmail Coupon No. 80 for Descriptive Literature.

FAMCO MACHINE COMPANY

RACINE, WISCONSIN, U. S. A.

FORMERLY FRIIS & MILLER MACHINE COMPANY

For the First Time! Vacuum Cleaning Made Applicable to All Plant Cleaning Requirements at Low Cost With



Breuer's Ball Bearing

TORNADO

Portable Industrial Vacuum Cleaner

•

This new machine is designed to solve all industrial cleaning problems without the expense of installing a stationary plant or using so-called portable cleaners which are too heavy and expensive for average plant applications.

TREMENDOUS POWER

1 H. P. Motor—46¼ Waterlift

Do not confuse the TORNADO with light-duty cleaning machines. Model 112 combines light weight (only 40 pounds) with tremendous cleaning power (1 H. P. G. E. ball bearing Motor—46¼" waterlift). Patented principle of separating fine dust from refuse and depositing heavy dirt in tank makes this cleaner as applicable to heavy duty work as the largest machines. Sturdy construction insures long life and low yearly cost.

Has plenty of power and capacity to handle dust, dirt, sand, sawdust, metal scraps, filings, etc. Attachments available for cleaning boiler tubes, ovens, machinery, walls, floors, pipes, etc. Motor unit can be quickly removed for blowing dust from motors, etc. The handiest heavy duty, low cost, time and labor saving unit ever built.

We prove TORNADO advantages right in your plant without obligation. Send Quickmail Coupon No. 30 for details of trial offer and further information or write.

BREUER ELECTRIC MFG. CO.

842 Blackhawk Street, Chicago, Illinois

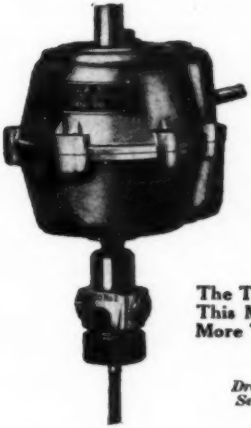
THE ONLY TAPPER WITH A LEATHER CLUTCH

Ettco - Emrick

TAPPING ATTACHMENTS

ETTCO pioneered sensitive tapping 15 years ago with a leather lined friction driving clutch.

As yet we have found no substitute to equal the smooth, consistent super-sensitive action of leather for the exacting requirements of tapping.



The 1937 clutches have about double the "pull" and wear. Taking the Tapper apart and changing clutches is now a matter of a few minutes.

The Tappers have ball bearing spindles — needle bearing intermediate gears and all helical gears to insure the greatest possible speed.

The Tap Idles "In"—Not Reverse—This Means Better Holes and Far More Tap Life.

Drop us a line for our catalogue. Send Quickmail Coupon No. 49

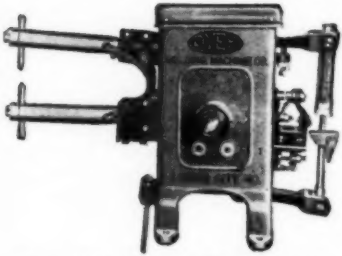
These tappers are used with the ETTCO *multiple tapping system* and our No. 71 *gravity foot operated tapping machine.*

ETTCO TOOL CO.

594 JOHNSON AVE. BROOKLYN, N. Y.

A REAL WELDER

PRICE! Performance!
Prompt Delivery!



Bench and Floor Types

Spot Welders From 2½ to 20 K. W.

Immediate stock shipment. Highest power factor of any welder on the market. Economical with current. Investigate the savings possible with Dyer welders. Do away with old methods of riveting and bolting.

BENCH TYPE:

2½ kw 6" arms, 20 ga. cap.. $110
5 kw 12" arms, 18 ga. cap.... 135
7½ kw 20" arms, 16 ga. cap.. 150

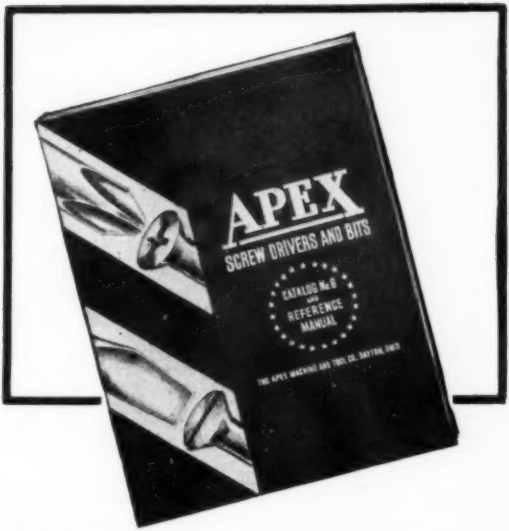
FLOOR TYPE:

7½ kw 20" arms, 16 ga. cap.. $160
10 kw 24" arms, 1/8" cap.... 300
15 kw 24" arms, 3/16" cap.... 375
30 kw 24" arms, 1/4" cap.... 400

Above prices will advance after present stock is exhausted

Send for Literature Today!

INTERSTATE MACHINERY CO.
109 S. CLINTON ST., CHICAGO, ILL.



THIS CATALOG

is of real importance to any user of Phillips Recessed Head or Slotted Head Screws.

Complete information on all kinds of Power and Spiral Screw driver bits to fit all makes of Electric, Air and Spiral screw drivers.

Write for your copy on your Company letterhead.

USE QUICK MAIL COUPON No. 61

The APEX

—MACHINE & TOOL CO. Dayton, Ohio—

DRILL JIG
COLONIAL
BUSHINGS

For specifications sheet and price lists use Quickmail Coupon No. 55.

THE PRECISION UNIVERSAL TOOL HEAD

does not need an introduction! It has proved itself to have **SPEED, RANGE, EFFICIENCY** and **ADJUSTABILITY,** at all times and at all speeds, **WITHOUT STOPPING EITHER TOOL OR MACHINE!**

ONE COMPACT SIZE handles all diameters, internal or external from 1/16 to 16". For Boring, Facing, Recessing, Trepanning, Undercutting, etc.

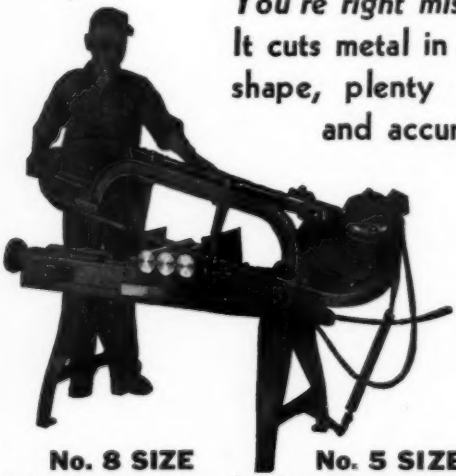
Bulletins sent on request. When you write, use Quickmail Coupon No. 60.

THE PRECISION TOOL COMPANY

Bridgeport, Connecticut

THIS WELLS BAND SAW IS THE HANDIEST MACHINE IN THE SHOP!

You're right mister!
It cuts metal in any shape, plenty fast and accurate.



No. 8 SIZE
8 in. diameter round or 8 in. by 16 in. flat.

No. 5 SIZE
5 in. diameter round or 5 in. by 10 in. flat.

Send Coupon No. 31 for our latest folder

WELLS MFG. CORP. Three Rivers Michigan

WYCO

for PRODUCTION WORK

3 SPEED V-BELT DRIVE 1800-3600-6000

1 H. P. Single Phase or 3-Phase Motor, 110-220 Volt, 60 Cycle, A. C.

Send Coupon No. 19 for Complete Catalog No. 37.

The HYSPEED WYCO drives the new bakelite bond grinding wheels at their most efficient cutting speed.

Complete, including one aluminum wheel guard, one wheel arbor, one 6-inch bakelite bonded grinding wheel.

Model 43 on Tripod Caster Base **$165**

Model 43T on "Roll-Easy" 3 Wheel Truck Mounting **$175**

WYZENBEEK & STAFF, INC.

642 WASHINGTON BLVD., CHICAGO, ILL.

A Complete Line
of Heavy - Duty GRINDERS
6" to 12" Bench and Pedestal Types

each guaranteed for 1 year

At Left, Our Largest__$208
Above, Our Smallest_$19.50

MAIL QUICKMAIL COUPON No. 18 FOR BULLETINS

BALDOR ELECTRIC CO.
(Electrical Manufacturers for 17 years)
4368 Duncan Ave., St. Louis, Mo.

BALDOR
BALL BEARING **GRINDERS**

ERRINGTON HYSPD

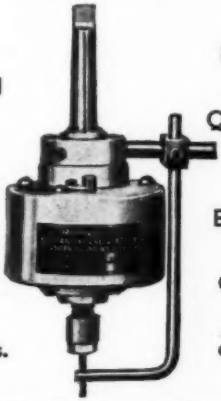
Super-Sensitive Ball Bearing

Cone Drive

2 to 1 Auto-Reverse Tapping Chuck

Combination
Bronze & Ball
Bearings
Thru-Out

Easy and
Economical
Replacement
of
Cone-Clutches.



Depth gauge
facilitates
Quick-Handling
Especially
on
Bottom-Holes

Other Styles
and Sizes
0" to 2" taps

Size	Taps in Steel	Taps in Cast Iron	Price	Code
No. 00	0" to 3/16"	to ¼"	$35.00	Phlam
No. 0	to ⅜"	to ½"	$50.00	Phalanx

The principle on which this Style is designed is especially effective on very small tapping; whereas in the **No. 0** size the Frictional Grip is Greatly **INTENSIFIED**, to cover a wider range, without loss of sensitiveness.

Errington Mechanical Laboratory

Main Office and Works: STATEN ISLAND, New York

Chicago Office: 6047 N. Talman Ave. New York Office: 220 Broadway Boston Office: 930 Old South Bldg.

DRILL JIG ACME BUSHINGS

ASA

Standardized

Prompt delivery from stock on over 10,900 standard items — over 6700 ACME Standard — over 4200 A. S. A. Standard — all completely finished ready for use. *Special sizes made to order.*

Made in our new plant by the most exacting and scientific methods — insuring accurate fit plus long wear—concentric within .0003" full indicator reading.

Types shown at left, top to bottom, are: plain stationary press fit, type 'P'; shouldered stationary press fit, type 'S'; removable slip, type 'R'.

•

Send *Quickmail Coupon No. 39* for bulletin containing complete data and low prices. Satisfactory service guaranteed.

•

ACME
INDUSTRIAL CO.
210 N. LAFLIN ST.,
CHICAGO, ILL.

POWER
For Big Jobs

COMPACT
For Close Quarters

STANLEY No. 77 ELECTRIC DISC SANDER

A powerful motor, long life gears and free-running ball bearings throughout equip this new 7" Stanley Disc Sander to handle the biggest production jobs in your shop. Compact streamline design makes it easy to use in close quarters. Ask your Stanley distributor for a free demonstration, or write for folder. Stanley Electric Tool Division, The Stanley Works, New Britain, Conn.

STANLEY STANLEY **ELECTRIC TOOLS**

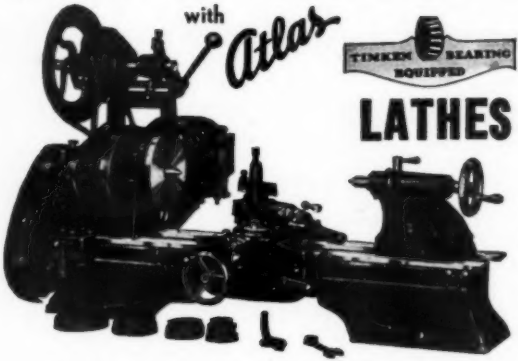
A Complete Line For Industry *"Cost Less Per Year"*

SPEED UP PRODUCTION

with *Atlas*

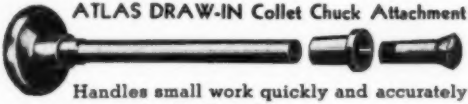
TIMKEN BEARING EQUIPPED

LATHES



All those small part production jobs can now be handled easier and quicker on inexpensive Atlas Lathes equipped with Timken Bearings at $111.50 to $138.50. Other models $45.50 and up.

ATLAS DRAW-IN Collet Chuck Attachment



Handles small work quickly and accurately —capacity 1/32" to 1/2".

SEND COUPON No. 34 TODAY FOR THIS NEW CATALOG—

52 pages showing the latest in metal and wood lathes, drill presses, grinders, motors, tools, and attachments.

ATLAS PRESS CO.

650 N. Pitcher St., Kalamazoo, Mich.

Factory Displays at:

CHICAGO
35 E. Wacker at Wabash

NEW YORK
130 W. 42nd St.

PHILADELPHIA
113 N. Third St.

NICHOLSON
EXPANDING MANDRELS

They act as internal chucks for holding work while being machined on lathes, millers, grinders or shapers. Made in 14 different sizes taking bores of every fractional part of an inch from ½" to 7". Sold singly or in sets. Write for Bulletin 530.

CONTROL VALVES
2, 3 and 4 Way Types

For operating air, water, steam or oil, single and double acting cylinders. Made in lever, foot, solenoid and motor operated styles for pressures up to 300 lbs. Hydraulic Valves up to 4000 lbs.

Send Quickmail Coupon No 45 for Bulletin.

Other Products—Arbor Presses, Flexible Couplings, Steam Traps, Steam Separators, Steel and Stainless Steel Floats, etc.

W. H. Nicholson & Company
117 Oregon Street, Wilkes-Barre, Pa.

DUMORE *Announces*

a new MORE POWERFUL HAND GRINDER

Here's the "very latest" in off-hand grinding tools—the new Dumore No. 10. Compact, well balanced and weighing but 2 lbs. 12 oz., it is identical in size and shape to the popular No. 8 Dumore grinder—yet the No. 10 has twice the horsepower (1/18) and 1/3 greater speed — 20,000 r. p. m.

Originally custom-made for one of the large automobile manufacturers who wanted EXTRA CAPACITY without increased size, the Dumore No. 10 has found increasing usefulness in practically every industry. Available with a variety of wheels and abrasive bands. Write for catalog and name of nearest Distributor for demonstration.

For information, send Quickmail Coupon No. 10 today!

THE DUMORE CO., RACINE, WIS.

Per your ad in June Hitchcock's Blue Book send catalog on the Dalrae Milgrehill.

DALRAE TOOLS CO.
Syracuse Bldg.
SYRACUSE, N. Y.

Per your ad in June Hitchcock's Blue Book send bulletin on Press Brakes.

DREIS & KRUMP MFG. CO.
7440 Loomis Blvd.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send bulletin on Hardinge Collets.

HARDINGE BROTHERS, INC.
ELMIRA, N. Y.

Per your ad in June Hitchcock's Blue Book send bulletin on the Buffalo Bending roll.

BUFFALO FORGE CO.
161 Mortimer St.
BUFFALO, N. Y.

Per your ad in June Hitchcock's Blue Book send data on Collets and Feed Fingers.

MORRISON MACHINE PRODUCTS, INC.
ELMIRA, N. Y.

Per your ad in June Hitchcock's Blue Book send catalog on Thread Chasers.

JONES & LAMSON MACHINE CO.
SPRINGFIELD, VT.

Per your ad in June Hitchcock's Blue Book send me details on Speed Reducers.

CULLMAN WHEEL CO.
1359 Altgeld St.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send data on Dumore Grinders.

THE DUMORE CO.
RACINE, WIS.

Per your ad in June Hitchcock's Blue Book send me catalog on No. 18 Hack Saw.

ARMSTRONG-BLUM MFG. CO.
5841 Bloomingdale Ave.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send catalog on De Luxe Grinder.

CHICAGO WHEEL & MFG. CO.
1101 W. Monroe St.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send catalog on Armstrong Bros. Tools.

ARMSTRONG BROS. TOOL CO.
308 N. Francisco Av.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send Hand Grinder on 10-day trial.

CHICAGO WHEEL & MFG. CO.
1101 W. Monroe St.
CHICAGO, ILL.

Patent Pending in U. S. and Foreign Countries—Louis Galter

7

Stick coupon on a postcard or letterhead and sign name, title and firm. It will bring a bulletin on Chicago Press Brakes.

DREIS & KRUMP MFG. CO.

1

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on The Midgetmill.

DALRAE TOOLS CO.

8

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on the Buffalo Bending Rolls.

BUFFALO FORGE CO.

2

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Hardinge Collets.

HARDINGE BROS., Inc.

9

Stick coupon on letterhead only and sign your name, title and firm for catalog on Thread Chasers.

JONES & LAMSON MACHINE CO.

3

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Collets and Feed Fingers.

MORRISON MCH. PRODUCTS

10

Stick coupon on letterhead or postcard and sign name, title and firm for information on Dumore Grinders.

THE DUMORE CO.

4

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Cullman Speed Reducers.

CULLMAN WHEEL CO.

11

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on DeLuxe Handee Grinders.

CHICAGO WHEEL & MFG. CO.

5

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Marvel Hacksaws.

ARMSTRONG-BLUM MFG. CO.

12

Stick coupon on letterhead or postcard and sign name, title and firm for Handee Grinder on 10 day trial.

CHICAGO WHEEL & MFG. CO.

6

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Armstrong Bros. Tools.

ARMSTRONG BROS. TOOL CO.

Per your ad in June Hitchcock Blue Book send details on Pro-Grip Tap Holders.

PROCUNIER SAFETY CHUCK CO.
14. S. Clinton St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on the Wyze line.

WYZENBEEK & STAFF
642 Washington Bl.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send details on The Gilmitter.

TOMKINS-JOHNSON CO.
JACKSON, MICH.

Per your ad in June Hitchcock Blue Book send bulletin on Neck Valve.

GALLAND-HENNING MFG. CO.
2753 S. 31st St.
MILWAUKEE, WIS.

Per your ad in June Hitchcock Blue Book send catalog on Shelton Tools.

SHELDON MACHINE CO.
3255 Cottage Grove Ave.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send details on Haskins Tappers.

R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send bulletin on the Jig. Drill Sawers.

SKILSAW, INC.
3318 Elston Ave.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on Flexible Shaft Tools.

R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on the Oliver Drilling Jig.

OLIVER INSTRUMENT CO.
1408 Maumee St.
ADRIAN, MICH.

Per your ad in June Hitchcock Blue Book send catalog on Grinders and Polishers.

HAMMOND MACHINERY BUILDERS
KALAMAZOO, MICH.

Per your ad in June Hitchcock Blue Book send bulletin on ball bearing grinders.

BALDOR ELECTRIC CO.
4368 Duncan Ave.
ST. LOUIS, MO.

Per your ad in June Hitchcock Blue Book send data on Collets and Chucks.

RIVETT LATHE & GRINDER, INC.
Brighton
BOSTON, MASS.

Patent Pending in U. S. and Foreign Countries—Louis Galter

19
Stick coupon on letterhead or postcard and sign name, title and firm name for catalog on the complete Wyco line.

WYZENBEEK & STAFF

20
Stick coupon on letterhead or postcard and sign name, title and firm for your bulletin on Nopak Valves.

GALLAND-HENNING MFG. CO.

21
Stick coupon on letterhead or postcard and sign name, title and firm for booklet on Haskins Tappers.

R. G. HASKINS CO.

22
Stick coupon on letterhead or postcard and sign name, title and firm for a catalog of Flexible Shaft Tools.

R. G. HASKINS CO.

23
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Grinders & Polishers.

HAMMOND MACHINERY BUILDERS

24
Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Rivett Collets & Chucks.

RIVETT LATHE & GRINDER, Inc.

13
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tru-Grip tap holder.

PROCUNIER SAFETY CHUCK CO.

14
Stick coupon on letterhead or postcard and sign name, title and firm for circular on The Clinchor.

TOMKINS-JOHNSON CO.

15
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Sheldon Tools.

SHELDON MACHINE CO.

16
Stick coupon on letterhead or postcard and sign name, title and firm for information on the 7-inch Disc Sanders.

SKILSAW, INC.

17
Stick coupon on letterhead or postcard and sign name, title and firm for full information on Oliver Drill Pointer.

OLIVER INSTRUMENT CO.

18
Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Ball Bearing Grinders.

BALDOR ELEC. CO.

Patent Pending in U. S. and Foreign Countries—Louis Galter

31
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Metal Cutting Band Saws.

WELLS MFG. CORP.

32
Stick coupon on letterhead or postcard and sign name, title and firm for catalog of Ross Operating Valves.

ROSS OPERATING VALVE CO.

33
Stick coupon on letterhead or postcard and sign name, firm and address for circular on Titan Stud Setters.

TITAN TOOL CO.

34
Stick coupon on letterhead or postcard and sign name, title and firm for catalog of Atlas Timken Bearing Equipped Lathes.

ATLAS PRESS CO.

35
Stick coupon on letterhead or postcard and sign name, title and firm for full information on BASA Hammers & Reversible Ratchet Wrench.

GREENE-TWEED & CO.

36
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on the L-W Line.

L-W CHUCK CO.

25
Stick coupon on letterhead or postcard and sign name, title and firm for information on Wittek Roll Feeds.

WITTEK MFG. CO.

26
Stick coupon on letterhead or postcard and sign name, title and firm for your catalog on Flexible Shaft Machines.

N. A. STRAND & CO.

27
Stick coupon on letterhead or postcard and sign name, title and firm for your copy of "The Facts About Rotor Tools".

ROTOR AIR TOOL CO.

28
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on "Modern" Products.

MODERN COLLET & MACHINE CO.

29
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Delta 14-inch Drill Presses.

DELTA MFG. CO.

30
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tornado Cleaner.

BREUER ELECTRIC MFG. CO.

Per your ad in June Hitchcock Blue Book send data on Roll Feeds & Roll Stands.

WITTEK MFG. CO.
4305-9 W. 27th Pl.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send data on Metal Cutting Band Saws.

WELLS MFG. CORP.
315 Seventh Ave.
THREE RIVERS, MICH.

Per your ad in June Hitchcock Blue Book send catalog on Flexible Shaft Mchs.

N. A. STRAND & CO.
5001 N. Lincoln St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog of Ross Operating Valves.

ROSS OPERATING VALVE CO.
6484 Epworth Blvd.
DETROIT, MICH.

Per your ad in June Hitchcock Blue Book send booklet "The Facts About Rotor Tools."

ROTOR AIR TOOL CO.
CLEVELAND, OHIO

Per your ad in June Hitchcock Blue Book send circular on Bited Better.

TITAN TOOL CO.
FAIRVIEW, PA.

Per your ad in June Hitchcock Blue Book send catalog on "Modern" Products.

MODERN COLLET & MACHINE CO.
403 Salliotte St.
ECORSE, MICH.

Per your ad in June Hitchcock Blue Book send estimate on Timken Bearing Lathes.

ATLAS PRESS CO.
650 N. Pitcher St.
KALAMAZOO, MICH.

Per your ad in June Hitchcock Blue Book send estimate on Delta 14-in. Drill Presses.

DELTA MFG. CO.
665 E. Vienna Ave.
MILWAUKEE, WIS.

Per your ad in June Hitchcock Blue Book send me Circumflex on Ratchet Wrench.

GREENE-TWEED & CO.
109 Duane St.
NEW YORK, N. Y.

Per your ad in June Hitchcock Blue Book send information on the Terrell Cleaner.

BREUER ELECTRIC MFG. CO.
842 Blackhawk St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on the L-W line.

L-W CHUCK CO.
1-7 N. St. Clair St.
TOLEDO, OHIO

Patent Pending in U. S. and Foreign Countries—Louis Galter

L-W POWER SAW

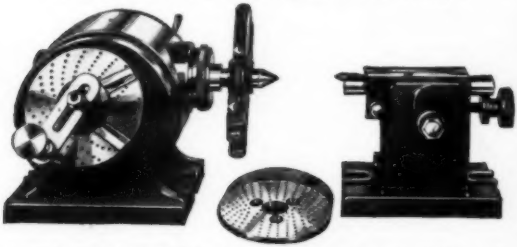
Capacity 6" x 6"

This high speed, heavy duty power hack saw is made of the highest grade materials with the finest workmanship. It is efficient and accurate in operation.

Automotive releasing device, which greatly increases the efficiency of this machine, is a new feature. Other features, including automatic trip, automatic stop and automatic relief of the saw blade on the non-cutting stroke, make this an ideal saw for any shop.

Weight 460 lbs. **$145**

New, Heavier Improved 10½" Universal Dividing Head Hardened and Ground Worm—Actual Swing 11"



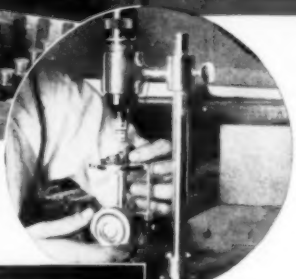
A new universal dividing head designed to give the utmost in a well-balanced, rigid and accurate index center. All materials and workmanship are of the highest grade. Head stock is swivel and graduated up to 180 degrees. Head can be tilted above and below the vertical and perpendicular lines. Spindle has taper bearing and is provided with take-up collar for end thrust. No. 10 B. & S. taper has large hole through spindle. **$125.**

L-W also manufactures magnetic chucks, lathe chucks, demagnetizers and vises. Send coupon No. 36 for catalog.

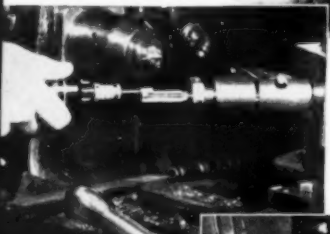
L-W CHUCK CO.

1–7 N. ST. CLAIR ST., TOLEDO, OHIO

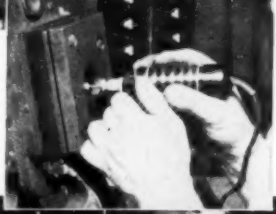
HAND



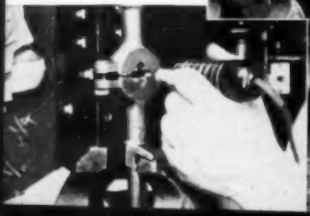
he De Luxe Handee ays for itself many imes over, often on ne job.



Reaches those hard-to-get-at places. Its light weight and ease of handling in any position save time on a wide range of operations.



Indispensable in die shops and all metal working plants for touching up and polishing every type of die, even when set on presses.



The most versatil
actually a whole
one. More than
able.

Indispensable in
experimental lab
duction line in la

For making, sh
metal products, a
tion materials, w
precision jobs
places on intric
without removing
machine.

The finest, fastest
tool for its typ
ounces. Speed,
portable; simply
socket. 110 volts

Try a Handee—y
its smooth, rapid
sponse and the
it will do.

Order one Today

IDEE TOOL OF 1001 USES

versatile tool ever offered—
a whole shop full of tools in
re than 200 accessories avail-

sable in model and tool room,
ntal laboratory, on the pro-
line in large and small plants.

ing, shaping, polishing all
oducts, alloys, glass, composi-
erials, wood, stone, etc. For
jobs and hard-to-get-at
on intricate machine parts,
emoving parts or dismantling

t, fastest and most powerful
its type and weight, 12
Speed, 25,000 r.p.m. It is
simply plug in any electric
10 volts, AC or DC.

ndeed—you'll be amazed at
th, rapid, almost human re-
nd the wide range of work

e Today on 10-Days Trial.

- Grinds
- Drills
- Saws
- Routs
- Sands
- Carves
- Polishes
- Engraves
- Sharpens
- Cuts
- Cleans

For FREE CATALOG
Use COUPON No. 11

For TRIAL OFFER
Use COUPON No. 12

De Luxe Model

$18.65

postpaid
5 Accessories

CHICAGO WHEEL AND MFG. CO.

1101 W. Monroe St., Dept. PP, Chicago 11

ERE'S A NEW TOOL THAT WILL

ut your Costs

QUARELY IN TWO

PATTERN WORK
OOL ROOM
AINTENANCE
RODUCTION
ALVAGE

—don't go another day without getng facts about this amazing **Cost utting** tool—

THE NEW HOBART 40 VOLT "Simplified" ARC WELDER

which comes to you on 30 days trial...which s features many others leave off...which costs u less to operate...which handles either plain r coated rod with ease. The coupon below rings complete details. Hobart Bros., Box B-67, Troy, Ohio. One of the world's largest uilders of arc welders.

GET
30 Days Trial
AT OUR RISK
TO PROVE
Profits
MAIL THIS COUPON

FREE!!
The booklet above tells of the many profitable uses of welding in large and small shops. *Use Quickmail Coupon No. 51.*

Hobart Bros., Box TB-67, Troy, Ohio

Gentlemen: Please send me, without obligation, complete details on the new Hobart 40 Volt Arc Welder for use in _____

Also the complete catalog illustrated.

Name _____

Address _____

Per your ad in June Hitchcock Blue Book send catalog on Weldon End Mills. **37**

WELDON TOOL CO.
321 Frankfort Ave.
CLEVELAND, OHIO

Per your ad in June Hitchcock Blue Book send catalog of your Boston Tool Holders. **38**

W. M. ZIEGLER TOOL CO.
509 Leib St.
DETROIT, MICH.

Per your ad in June Hitchcock Blue Book send circular on M-B Air Grinder. **39**

M-B PRODUCTS
128 E. Larned St.
DETROIT, MICH.

Please send circular on E-I power as described in June Hitchcock's Blue Book. **40**

ONSRUD MACH. WORKS, INC.
3906 Palmer St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send me Bulletin on Bushings. **41**

ACME INDUSTRIAL CO.
210 N. Laflin St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on Chart Lathe. **42**

W.H.NICHOLSON & CO.
WILKES-BARRE, PA.

Per your ad in June Hitchcock Blue Book send catalog No. 105 on Scully-Jones Tools. **43**

SCULLY-JONES & CO.
1905 S. Rockwell St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on Power Tools. **44**

MALL TOOL CO.
7742 So. Chicago Ave.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send me catalog of Ridge slip tools. **45**

RIDGE TOOL CO.
Elyria, Ohio

Per your ad in June Hitchcock Blue Book send catalog on Grieder and Brothers. **46**

VONNEGUT MOULDER CORP.
1805 Madison Ave.
INDIANAPOLIS, IND.

Per your ad in June Hitchcock Blue Book send me catalog on the Whitney line of Tools. **47**

WHITNEY METAL TOOL CO.
ROCKFORD, ILL.

Per your ad in June Hitchcock Blue Book send circular on Angle Dressers. **48**

VINCO TOOL CO.
7348 Central Ave.
DETROIT, MICH.

Patent Pending in U. S. and Foreign Countries—Louis Galter

43

Stick coupon on letterhead or postcard and sign name, title and firm for information on Ziegler Floating Tool Holders.

W. M. ZIEGLER TOOL CO.

44

Stick coupon on letterhead or postcard and sign name, title and firm for information on Onsrud air turbine grinders.

ONSRUD MACHINE WORKS, INC.

45

Stick this coupon on your letterhead and sign. If you wish only one catalog, cross out either valves or mandrels.

W. H. NICHOLSON

46

Stick this coupon on a postcard and sign name, title and firm name to get catalog on Mall Power Tools.

MALL TOOL CO.

47

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Marschke Grinders.

VONNEGUT MOULDER CORP.

48

Stick coupon on letterhead or postcard and sign name, title and firm for circular on Vinco Angle Dressers.

VINCO TOOL CO.

37

Stick coupon on letterhead or postcard and sign name, title and firm for full information on Weldon End Mills.

WELDON TOOL CO.

38

Stick coupon on letterhead or postcard and sign name, title and firm for information on M-B high speed air grinders.

M-B PRODUCTS

39

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Drill Jig Bushings.

ACME INDUSTRIAL CO.

40

Stick coupon on letterhead or postcard and sign name, title and firm for catalog No. 105 on Scully-Jones line of tools.

SCULLY-JONES & CO.

41

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog of Ridge tools and equipment.

RIDGE TOOL CO.

42

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on the Whitney line of tools.

WHITNEY METAL TOOL CO.

55

Stick coupon on letterhead or postcard and sign name, title and firm for information and prices on Colonial Bushings.

COLONIAL BUSHINGS, INC.

56

Stick this coupon on a postcard or letterhead and mail to receive a rivet price list and illustrations of Chicago Automatic Rivet Setters.

CHICAGO RIVET & MACHINE CO.

57

Stick coupon on letterhead or postcard and sign name, title and firm for information on the combination vise and drill table.

MODERN MACHINE TOOL CO.

58

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Progressive End Mills.

PROGRESSIVE TOOL & CUTTER CO.

59

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Diamond-Grip Collets.

SUTTON TOOL CO.

60

Stick this coupon on a postcard or letterhead to receive data on the Precision Tool Head.

PRECISION TOOL CO.

49

Stick coupon on letterhead or postcard and sign name, title and firm for information on High Speed Tappers.

ETTCO TOOL CO.

50

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on Electric Drills.

TEMCO ELECTRIC MOTOR CO.

51

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Hobart Arc Welder.

HOBART BROTHERS

52

Stick coupon on letterhead or postcard and sign name, title and firm for your General Catalog.

VICTOR MACHINERY EXCHANGE, Inc.

53

Stick coupon on letterhead or postcard and sign name, title and firm for information on Ace Welders.

PIER EQUIPMENT MFG. CO.

54

Stick coupon on letterhead or postcard and sign name, title and firm for your new Catalog on Federal Test Indicators.

FEDERAL PRODUCTS CORP.

Per your ✓ in June Hitchcock Blue Book send me catalog on High Speed Tools.

ETTCO TOOL CO.
598 Johnson Ave.
BROOKLYN, N. Y.

Per your ✓ in June Hitchcock Blue Book send information on Colonial Bushings.

COLONIAL BUSHINGS, INC.
DETROIT, MICH.

Per your ✓ in June Hitchcock Blue Book send me catalog on Electric Motors.

TEMCO ELEC. MOTOR CO.
LEIPSIC, OHIO

Per your ✓ in June Hitchcock Blue Book send Industrial Rivet price list.

CHICAGO RIVET & MACHINE CO.
1855 S. 54th Ave.
Cicero P. O.
CHICAGO, ILL.

Per your ✓ in June Hitchcock Blue Book send information on your new Arc Welder.

HOBART BROTHERS
Box TB-67
TROY, OHIO

Per your ✓ in June Hitchcock Blue Book send information on the combination vise.

MODERN MACH. TOOL CO.
Jackson, Mich.

Per your ✓ in June Hitchcock Blue Book send me General Catalog.

VICTOR MACHY. EXCHANGE, INC.
251 Centre St.
NEW YORK, N. Y.

Per your ✓ in June Hitchcock Blue Book send me catalog on Progressive End Mills.

PROGRESSIVE TOOL & CUTTER CO.
FERNDALE, MICH.

Per your ✓ in June Hitchcock Blue Book send data on Arc Welders.

PIER EQUIPMENT MFG. CO.
623 Cross St.
BENTON HARBOR, MICH.

Per your ✓ in June Hitchcock Blue Book send me catalog on Diamond Drill Collets.

SUTTON TOOL CO.
2836 W. Grand Bl.
DETROIT, MICH.

Per your ✓ in June Hitchcock Blue Book send me catalog on Test Indicators.

FEDERAL PRODUCTS CORP.
1144 Eddy St.
PROVIDENCE, R. I.

Per your ✓ in June Hitchcock Blue Book send bulletin on the Tool Heater.

PRECISION TOOL CO.
BRIDGEPORT, CONN.

Patent Pending in U. S. and Foreign Countries—Louis Galter

Per your ad in June Hitchcock Blue Book send catalog No. 9 and Reference Manual.

APEX MACHINE & TOOL CO.
3rd & Madison Sts.
DAYTON, OHIO

Per your ad in June Hitchcock Blue Book send more details on Putnam End Mill.

PUTNAM TOOL CO.
2983 Charlevoix Av.
DETROIT, MICH.

Per your ad in June Hitchcock Blue Book send more details on Gairing Hollow Mills.

THE GAIRING TOOL CO.
1629-35 W. Lafayette
DETROIT, MICH.

Per your ad in June Hitchcock Blue Book send full information on Federal Presses.

FEDERAL PRESS CO.
ELKHART, IND.

Per your ad in June Hitchcock Blue Book send bulletin on the Wagna-Slide.

ROBBINS ENG. CO.
639 Mt. Elliott
DETROIT, MICH.

Per your ad in June Hitchcock Blue Book send more details on Banner Sax Tools.

BANNER MFG. CO.
1873 Clybourn Ave.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send data on Healing Machines.

SUNNEN PRODUCTS CO.
7928 Manchester Av.
ST. LOUIS, MO.

Per your ad in June Hitchcock Blue Book send information on Schmidt milling tools.

GEO. T. SCHMIDT INC.
1802 Belle Plaine Av.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send information on Do-All Machines.

CONTINENTAL MACHINE SPECIALTIES
1301 Washington Av., So.
MINNEAPOLIS, MINN.

Per your ad in June Hitchcock Blue Book send full information on Universal Vises.

ODIN UNIVERSAL CORP.
110 S. Dearborn St.
CHICAGO, ILL.

Per your ad in June Hitchcock Blue Book send catalog on Keltex Machines.

PRATT & WHITNEY
Div. Niles-Bement-Pond Co.
HARTFORD, CONN.

Per your ad in June Hitchcock Blue Book send bulletin on Tool and Cutter Grinders.

GALLMEYER & LIVINGSTON CO.
303 Straight Ave.
GRAND RAPIDS, MICH.

Patent Pending in U. S. and Foreign Countries—Louis Galter

67
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Putnam End Mills, etc.

PUTNAM TOOL CO.

68
Stick coupon on letterhead or postcard and sign name, title and firm for full information on Federal Presses.

FEDERAL PRESS CO.

69
Stick coupon on letterhead or postcard and sign name, title and firm for your copy of the banner catalog of Box Tools.

BANNER MFG. CO.

70
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Schmidt Marking Machines.

GEO. T. SCHMIDT, INC.

71
Stick coupon on letterhead or postcard and sign name, title and firm for full information on Universal Vises.

ODIN UNIVERSAL CORP.

72
Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on the Tool and Cutter Grinders.

GALLMEYER & LIVINGSTON CO.

61
Stick coupon on letterhead or postcard and sign name, title and firm for catalog No. 9 and Reference Manual.

THE APEX MACHINE & TOOL CO.

62
Stick coupon on letterhead or postcard and sign name, title and firm for catalog of Gairing Hollow Mills.

THE GAIRING TOOL CO.

63
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Magna-Sine.

ROBBINS ENGINEERING CO.

64
Stick coupon on letterhead or postcard and sign name, firm and address for data on Sunnen Honing Machines.

SUNNEN PRODUCTS CO.

65
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Do-All Machines.

CONTINENTAL MCH. SPECIALTIES

66
Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Kellerflex Machines.

PRATT & WHITNEY
Div. Niles-Bement-Pond Co.

79
Stick coupon on letterhead or postcard and sign name, title and firm for information on automatic centering reels.

F. J. LITTELL MACHINE CO.

80
Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on Famco foot and arbor presses.

FAMCO MACHINE CO.

81
Stick coupon on letterhead or postcard and sign name, title and firm for information on the OS 36 die band saw.

GROB BROTHERS

82
Stick coupon on letterhead only and sign name, title and firm name for information on H & W Dialing Machines.

HENRY & WRIGHT MFG CO.

83
Stick coupon on letterhead or postcard and sign name, title and firm for information on Heuser drill jigs and fixtures.

HEUSER MFG. CO.

84
Stick coupon on letterhead or postcard and sign name, title and firm for information on Teco tungsten carbide tools.

SUPER TOOL CO.

73
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Palmgren Angle Vise.

CHICAGO TOOL & ENGINEERING CO.

74
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Master Lathe Converter.

MASTER MACHINE & TOOL CO.

75
Stick coupon on letterhead or postcard and sign name, title and firm for information on Norgren air regulators.

C. A. NORGREN CO.

76
Stick coupon on letterhead or postcard and sign name, title and firm for information on Fauver Conveyor lubricators.

J. N. FAUVER CO., INC.

77
Stick coupon on letterhead or postcard and sign name, title and firm for information on Black & Decker bench grinders.

BLACK & DECKER MFG. CO.

78
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Oliver disc and belt grinder.

OLIVER MACHINERY CO.

Per your ad in June Hitchcock's Blue Book send bulletin on your Angle Vise.

CHICAGO TOOL & ENGIN'R'G CO.
8382 S. Chicago Av.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send data on automatic contouring roots.

F. J. LITTELL MACHINE CO.
4125 Ravenswood Ave.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send me catalog on the Lathes Converter.

MASTER MACH. & TOOL CO.
North Kansas City
MO.

Per your ad in June Hitchcock's Blue Book send me catalog on fort and other presses.

FAMCO MACHINE CO.
RACINE, WIS.

Per your ad in June Hitchcock's Blue Book send me catalog on Norgren regulators.

C. A. NORGREN CO.
214 Santa Fe Drive
DENVER, COLO.

Per your ad in June Hitchcock's Blue Book send information on the 0836 Band Saw.

GROB BROTHERS
GRAFTON, WIS.

Per your ad in June Hitchcock's Blue Book send me circular on Fauver Lubricators.

J. N. FAUVER CO., INC.
87 Selden Ave.
DETROIT, MICH.

Per your ad in June Hitchcock's Blue Book send information on Dieing Machines.

HENRY & WRIGHT MFG. CO.
HARTFORD, CONN.

Please send circular on Elite Saw as described in June Hitchcock's Blue Book.

BLACK & DECKER MFG. CO.
TOWSON, MD.

Per your ad in June Hitchcock's Blue Book send literature on Heuser Drill Jigs.

HEUSER MFG. CO.
1638 N. Paulina St.
CHICAGO, ILL.

Per your ad in June Hitchcock's Blue Book send bulletin on the Oliver Grinder.

OLIVER MACHINERY CO.
GRAND RAPIDS, MICH.

Per your ad in June Hitchcock's Blue Book send me catalog on Tees Tools and Blanks.

SUPER TOOL CO.
356 E. Congress St.
DETROIT, MICH.

Patent Pending in U. S. and Foreign Countries—Louis Galter

ADJUSTING NUT OF RIGID PIPE WRENCH

Always Spins Easily

IN ALL SIZES
6" to 60"

Guaranteed housing won't warp so the adjusting nut never binds. Wide open, it doesn't clog with grease and mud.

Add to that the saving of 75% of your wrench repairs because of the unconditionally guaranteed housing; the no-slip no-lock replaceable jaws of chrome molybdenum alloy, hook jaw with handy pipe scale—a wrench that has earned its world-wide popularity.

Ask Your Jobber or Send Coupon No. 41 for Catalog

THE RIDGE TOOL CO.
ELYRIA, OHIO, U. S. A.

A RIGID PIPE TOOL

HANDIEST VISE YOU EVER USED

ANGLE VISE

NO. 000
with hardened and ground steel jaws grooved for holding round pieces
$9.75

MODEL 000
2½" JAW
DEPTH 1 7/16"
LENGTH 8"
WT. 10 lbs.

ACCURATELY GRADUATED--

HEAVY DUTY SIZES--4"-6"-8"

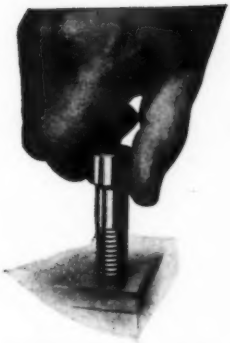
ALL SIZES CAN BE FURNISHED WITH OR WITHOUT SWIVEL BASES.

CARRIED IN STOCK BY ALL LEADING MILL SUPPLY HOUSES.

Write for complete information.

USE QUICKMAIL COUPON No. 73

CHICAGO TOOL & ENGINEERING CO.
8383 So. Chicago Ave. CHICAGO ILL.,



HERE, SLIPPING FINGERS WASTE TIME....

HERE, THE KNURL PREVENTS SLIPPING . . . . .

UNBRAKO

KNURLED Socket Head Cap Screws

Most mechanics who use their fingers when driving screws (and they all do) know that it's much easier to turn a screw with a knurled head than a plain one. The knurls give a better grip so that it can be turned both faster and farther before a wrench is needed. Production runs on like clock-work.

Too, when the screw has been countersunk, the Knurled "Unbrako" is the ONLY Socket Head Cap Screw that can be locked. Our Catalog explains the method—and gives you all details.

STANDARD PRESSED STEEL CO.

BRANCHES: BOSTON, DETROIT, INDIANAPOLIS

JENKINTOWN, PENNA.

Box 559

BRANCHES: CHICAGO, ST. LOUIS, SAN FRANCISCO

Send me a copy of the UNBRAKO catalog.

Mr. ..... Title .....

Firm .....

Address .....

SHELDON

ARBOR PRESSES and VISES

Arbor Presses
12 Sizes
From ¾ to 10 ton
Pressure

Plain and Swivel
Milling Machine Vises
4 Sizes
3½ to 8½ inch Jaws

Drill Press Vises
3 Sizes
4½-6½ and 9 inch Jaws

Shaper Vises
2 Sizes
12 and 14 inch Jaws

Use Quickmail Coupon No. 15 for Catalog and Price List

SHELDON MACHINE CO.

3257 Cottage Grove Ave., Chicago, Ill.

Triplex Flat Head Cap Screw

FULL - FINISHED

FLAT HEADS

THERE is a difference in flat head cap screws. You'll find Triplex are burnished on all surfaces, heads shaved, accurately pointed and threads clean-cut. Precision quality makes Triplex a better source of supply.

Write for samples, price list, catalog.

THE TRIPLEX SCREW CO.
5377 Grant Ave., Cleveland, Ohio

TRIPLEX

Complete Line of **CAP AND SET SCREWS, BOLTS AND NUTS**

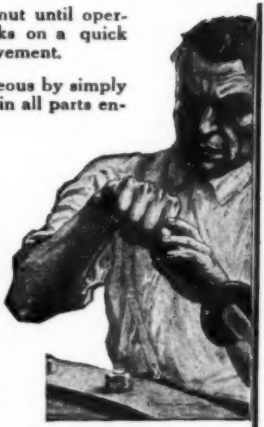
SPEED UP NUT TURNING

WITH THE

FAVORITE REVERSIBLE RATCHET WRENCH

Head does not leave the nut until operation is completed. Works on a quick straight-ahead ratchet movement.

Reverse motion instantaneous by simply turning pawl. New metal in all parts enables the "Favorite" to withstand harder and rougher usage.



A TIME SAVER

Each Head Can Turn Two Different-Sized Nuts.

This is a great saving over ratchet wrenches that turn only one nut in each head, as it means fewer parts to keep on hand.

Skinned Knuckles Avoided and Time Saved Head Cannot Slip Off Nut

USE COUPON No. 35

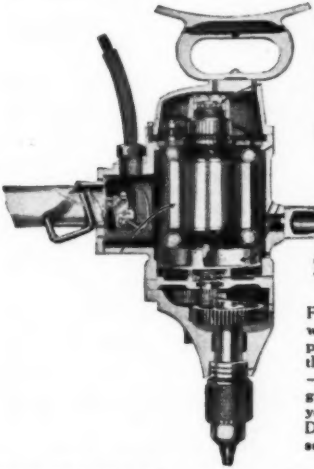
Send for Full Particulars

GREENE, TWEED & CO.

Sole Manufacturers

109 Duane St., New York

TEMCO Portable Electric DRILLS



Will Give You POWER and PERFORMANCE at a Low PRICE

That's Why there are over 50,000 Satisfied Users

For more than 27 years we have been manufacturing portable electric drills and the constant improvements—the practical experience gained—over that period is your assurance that TEMCO Drills will render satisfactory service.

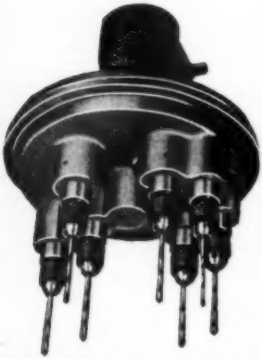
TOUGH Tools for TOUGH Jobs

TEMCO Drills are ruggedly built to withstand the roughest usage. Norma high grade ball bearings are used to eliminate friction, with a special ball thrust bearing which removes all end friction. Power is furnished by a 25 to 60 cycle universal motor for direct and alternating current which is fan cooled and will not run hot. Deep cut, wide face, oil hardened gears will stand the hardest wear. Made in 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" capacities. All sizes from the 3/8" up have these exclusive TEMCO features: oval aluminum handles, automatic switch and a balance on the side handle which makes the drill seem lighter than it really is and greatly reduces operator fatigue.

Send Quickmail Coupon No. 50 for Complete Information and Prices

The TEMCO ELECTRIC MOTOR CO.

• Leipsic, Ohio, U. S. A. •



SELLEW KOST KUTTERS

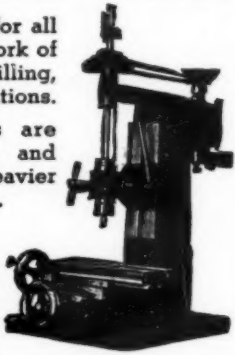
Why drill holes one at a time when SELLEW heads drill all at once in any formation?

Send us your specifications

SELLEW MACHINE TOOL CO.

PAWTUCKET RHODE ISLAND

LINLEY High Speed Vertical Bench Miller



An ideal machine for all small die, jig and tool work of all kinds on laying out, milling, drilling and boring operations.

Substantial savings are made in its simplicity and speed and in releasing heavier machines for larger work.

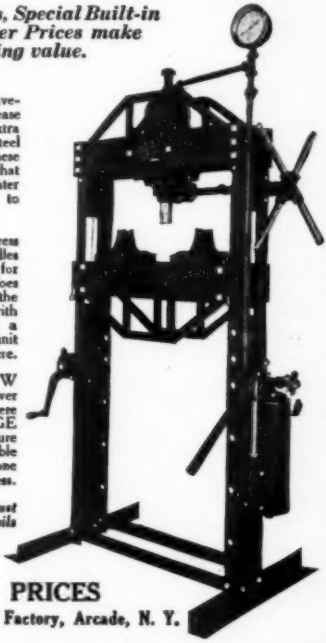
Table Dimensions
5½" x 14½"

LINLEY BROS. CO.

579 Fairfield Ave., Bridgeport Conn.

KRW Hydraulic and Sensitive ARBOR PRESSES

New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.



THE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this K R W feature as a time and labor saver can be appreciated. Also there is NO EXTRA CHARGE for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.

PRICES

F. O. B. Factory, Arcade, N. Y.

No. 37—35 ton Hydraulic and Sensitive Arbor Press $150.00
No. 37E—50 ton Hydraulic and Sensitive Arbor Press 180.00
No. 37F—70 ton Hydraulic and Sensitive Arbor Press 300.00

Gauge and fittings, $15.00 extra on all presses.

K. R. WILSON

10-16 Lock Street, Buffalo, N. Y., U.S.A.

EXPORT DEPARTMENT
90 West St., New York, N. Y.

WEST COAST BRANCH
722 Mateo St., Los Angeles

PUMP THOSE LIQUIDS!

EASY TURNING!

SAVE TIME AND MONEY

Handling gasoline, lube oils, paints, etc., from drums and barrels—that's a job for Blackmer Rotary Hand Pumps. No sloppage and no wastage! Good for 20 ft. lifts—NO PRIMING required. FOURTEEN models to choose from — PRICED RIGHT!

ECONOMICAL!

BLACKMER PUMP CO. 1812 CENTURY AVE GRAND RAPIDS, MICH.

Use Layout Fluid for general machine shop and tool room use on dies, jigs, fixtures, and machined parts. With the use of the die blue layout fluid, you do not have to polish the surface of work. Simply wipe surface fairly clean and brush on.

•

DRIES INSTANTLY

•

Write on your letterhead for free shop sample

DAYTON ROGERS MANUFACTURING CO., Minneapolis, Minn.

Weld With **EISLER WELDERS**

SPOT WELDERS

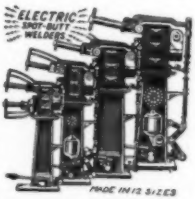
BUTT • WIRE • SEAM

A. C. ARC WELDERS

Welders as low as $25.00

Submit Samples for Test. No Obligation

EISLER ENGINEERING CO., Inc.
746 So. 13th St. NEWARK, N. J.



CENTERLESS GRINDING

Straight, cylindrical, double diameter.
Shoulder and profile surfaces.

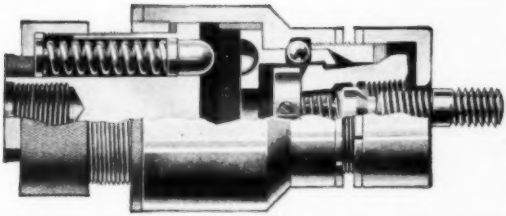
All kinds of materials

SCREW MACHINE PRODUCTS, HEAT-TREATED AND GROUND, IF NECESSARY

Send Blueprints or Samples for Estimates

PORTER MACHINE COMPANY

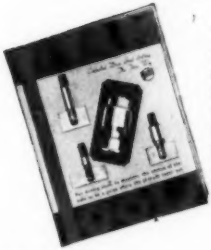
3120 Forrer Ave. **Cincinnati, Ohio**



TITAN STUD SETTER

Sets Studs to a Uniform Degree of Tightness without Strained or Mutilated Threads

The Titan Stud Setter is a new controlled drive type for driving stud bolts, being full automatic in loading and releasing. It is a power-driven unit adaptable to all types of drill presses, air or electric tools, both portable and stationary. Operates at high or low speeds. Positive in driving and automatic in releasing. Studs may be set to any predetermined degree of tightness.



The possibilities of increased production with this tool, due to its capacity, speed range and service, plus the added economy that its safety features assure by automatic operation—all contribute toward making it a tool worthy of investigation and profitable to use.

Send Quickmail Coupon No. 33 for Illustrated Circular

TITAN TOOL COMPANY

FAIRVIEW, PENNA., U. S. A.

JANETTE

Motorized Speed Reducers

for obtaining slow speeds

16 standard types—foot—flange and foot and flange mountings. Worm—Helical—Spur and Planetary gears. 1/50 to 7½ H. P. sizes.

Made by a company which has built geared apparatus since 1909.

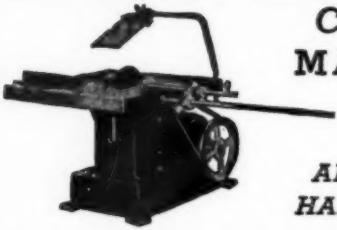
Rotary Converters — Blower Wheels — Motors — Motor-Generators — Generators.

Janette Manufacturing Company

552 W. Monroe St., Chicago, U. S. A.

New York — Philadelphia — Boston — Pittsburgh — Milwaukee

THE CHALLENGE ABRASIVE *CUT-OFF* MACHINE



Cuts

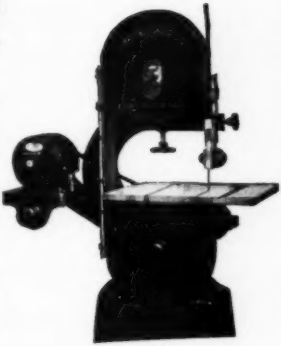
ANY METAL, HARD OR SOFT

Handles tubular or solid metals, soft or hard — even cuts hardened tool steel. Capacity up to one inch in thickness. No expensive blades to break. Write for details and prices today. 343

THE CHALLENGE MACHINERY CO.

CHICAGO GRAND HAVEN, MICH. NEW YORK

RACINE
DUPLEX BAND SAW



Two Speeds — for cutting wood, steel, brass, copper, tubing, angles, templates.

The ideal all around machine for production shops, tool rooms, pattern shops, laboratories.

Accurate — Fast — Rugged Modern, High Grade Construction.

"Standard the World Over"

Racine Tool & Machine Company
1754 State St., Racine, Wis.

NEW
STAINLESS STEEL RULE 24" LONG
Can be set to any angle by line of chords.

From 0° to 120° advancing by 30 minutes. Most practical and interesting tool for mechanics, metal shops, draftsmen, technical schools. **Price $1.95.**

Sent C.O.D. on 10 days trial with money back guarantee.

MAIL ORDER TO—
GEORGE SCHERR CO., 122 Lafayette St., N. Y. C.

QUICKMAIL COUPONS

To Save Time

In Writing to Advertisers:

USE THE QUICKMAIL COUPONS

Found on Pages 107 & 110

Be Sure to SIGN

- **Your NAME and POSITION**
- **FIRM NAME and ADDRESS before mailing**

This Will Assure An IMMEDIATE REPLY

A SIMPLE - SPEEDY - SERVICE

LAYOUT TABLES and PLATES — ANGLE PLATES-CUBES

TABLE AND BENCH
PLATE HEAVILY RIBBED

Astonishing LOW PRICES

Layout table is 30"x60", with adjusting screw in each leg to provide perfect table alignment. 1" table edge facilitates clamping. Bench type is 16"x20". All parts are carefully planed and commercially accurate.

Write for Complete Information

	Price	Approx. Wgt.
Layout Table	$135.00	1000 lbs.
Bench Layout Plate	18.00	100 lbs.
6x6x6 Angle Plate	12.00	25 lbs.
6x6x6 Cube	15.00	35 lbs.
6x6x12 Angle Plate	17.00	40 lbs.

PARSONS - MERRITT CO. VAN DYKE, MICHIGAN

TOOL MEN with Keen Discrimination say...

COMING AND GOING

It's Hotel

GIBSON

F. W. PALLANT, GEN. MGR.

Largest in Cincinnati

1000 ROOMS WITH BATH *from* $2.50

Represented in CHICAGO *by* Harry McEvoy, Hotel Sherman
PITTSBURGH *by* Bothwell & Warner, Standard Life Bldg.

"ALNOR" Pyrometers

For every requirement

Inexpensive-accurate-durable

For over 15 years "Alnor" pyrometers have been the choice of thousands of both large and small shops everywhere. Because of their lower price and compact size "Alnor" wall type pyrometers are extensively used for indicating temperatures of molten lead, babbitt, tin and die cast metals, heat treating furnaces, for flue gas temperatures, and similar service. Also other types of portable and wall pyrometers for every requirement.

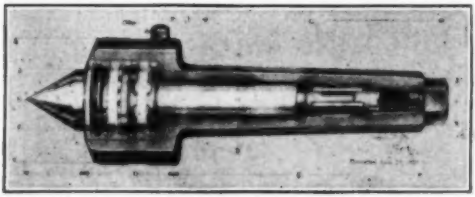
Write for Catalog

Illinois Testing Laboratories, Inc.

150 W. Austin Ave., -:- -:- Chicago, Ill.

37 Year's Experience

NIELSEN HEAVY DUTY LIVE CENTERS



Here is a tool especially adapted for unusually heavy work. It is equipped with a combination of precision type roller and ball bearings to assure the rigidity and maximum capacity for high speed production and longest possible service.

Bearings can be renewed if necessary at slight cost. Tests in your machine shop will quickly demonstrate the precision, low maintenance cost and the durability that have established the "Nielsen" reputation. Write for catalog showing our line of improved live centers and tailstock spindles, with adjustments to take up wear and preload the bearings.

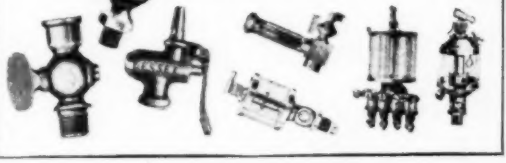
NIELSEN, Inc., Lawton, Mich.

ESSEX
LUBRICATING DEVICES
• Efficient - Dependable •

When you need lubricating equipment—from automatic lubricators to the tiniest grease cup—call on ESSEX. We can supply it, and 37 years of experience is at your disposal in solving any lubricating problem.

Write for Your Copy of ESSEX Catalog No. 7

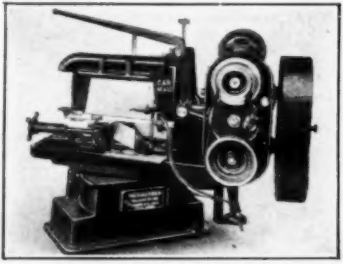
ESSEX BRASS CORPORATION
2000 Franklin St., Detroit, Mich.



THE NEWEST DEVELOPMENT IN METAL CUTTING MACHINES

CAPACITY 10"x10" or 6"x6"

Swivels on base for angular cuts—three speeds by V belt. Saw guide of parallel type. Saw frame has 4 large self aligning bearings, unaffected by excessive tightening of saw blade. Vise graduated to 45 degrees. Feed is compensating type.



Also built as FULL AUTOMATIC. Send for circulars giving complete information.

RASMUSSEN MCH. CO., RACINE, WIS.

Plunket Improved Vises

Made Right—Work Right—Give Satisfaction

Drill Press Vise

With Extra Lugs for Bolting Down

No. 1— 6" jaws, 1½" deep, opens 5" wt. 35 lbs. $23.40
No. 2—10" jaws, 2¼" deep, opens 8½" wt. 90 lbs. 34.20

We make a line of up-to-date Vises, for Drill Presses, Shapers, Milling Machines and Grinders. The picture shows our standard drill press vise as regularly furnished and carried in stock. All made of best materials. Our other Vises will be shown in following issues.

Prices are net, F. o. b. Chicago. Dealers' inquiries are solicited. Write for illustrated folder today.

J. E. Plunket Machine Co.

1823 W. Lake Street, Chicago, Illinois

DETROIT

Affords
No Finer
HOTEL
VALUE
Than the

810
OUTSIDE ROOMS
from $2 daily
EACH WITH BATH
AND SHOWER

BARLUM

CADILLAC SQUARE
AT BATES STREET

—GEARS—

Spur — Helical — Worm — Bevel—Miter, Etc.

We do broaching and all kinds of grinding.

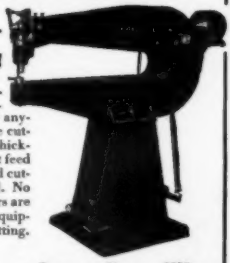
We carry a large stock of spline and square broaches which on small orders saves you money.

Prompt service and quality has retained a large list of customers for 25 years.

The Taylor Machine Company
1919 E. 61st St., Cleveland, Ohio

HIGH SPEED SHEARING

of Irregular Shapes — Ring and Circle Cutting



The ideal shear for sheet metal work—absolutely accurate and easily operated ..... metal is sheared and not punched ..... cut anywhere, no starting holes required for inside cutting ..... only one adjustment for various thicknesses of material used.....material does not feed itself by action of the cutters....unobstructed cutting vision....no further finishing required. No special cutters, pilots, templates, or strippers are needed....long life shear blades. Standard equipment furnished for ring and circle cutting. Write for complete information.

LIBERT MACHINE CO., Green Bay, Wis.

Manufacturers of shears since 1915

Libert Method

THIS DRAWING - TABLE IS ALWAYS RIGID . . .

No. 1802 Steelwood Table
size 36x60"

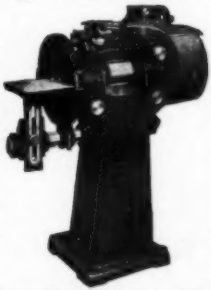
Steelwood drawing tables remain permanently rigid because of their welded steel framework.

Write today for complete information

HAMILTON MFG. CO., Two Rivers, Wisconsin

HAMILTON MANUFACTURING COMpANY
Two Rivers, Wisconsin, Dept. H—6-37
Please send me information on the Hamilton Steelwood Drawing Table
NAME .....
FIRM NAME .....
ADDRESS .....

SAVE TIME and INSURE BETTER WORK on the TYPE "R" Grinding, Polishing and Surfacing Machines

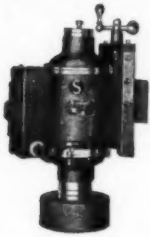


This handy, useful combination disc grinder, polishing wheel and belt surfacer offers wide utility in shops where power and space are limited. It can be easily converted into a buffing machine or light snagging grinder and still further extend its usefulness.

Sturdy in construction and of modern design throughout the Type "R" insures economical operation, long life and low maintenance.

PRODUCTION MACHINE CO.
GREENFIELD, MASS.
Grinding, Polishing and Finishing Machinery

Convert Your Machine Tool Into a GRINDER



The **STANDARD VERTICAL ANGLE PLATE GRINDER** may be used on a Planer, Boring Mill, etc. for finishing dies, grinding knives etc.

Sizes: 2 H. P. to 10 H. P.

Speed: 3600, 1800 or 1200 R. P. M. depending on diameter cup wheel to be used.

HEAVY DUTY GRINDERS AND BUFFERS

Direct Motor Driven and Adjustable Speed Belted Motor Drive, ¾ H. P. to 20 H. P. 6" to 30" wheels.

ALSO: Tool Post Grinders, Disc Grinders, Portable Grinders, Exhauster Equipment for Grinders, Portable Electric Drills.

Write for catalog

THE STANDARD ELECTRICAL TOOL CO.

1949 W. 8th St. Estab. 1912 Cincinnati, Ohio

POWERFUL

RED HEAD

ETCHERS and DEMAGNETIZERS

New models now cover all currents and work ranges.

SEND FOR LATEST CIRCULAR

PRINTZ ELECTRIC CO.

9362 Burnette

Detroit Mich.

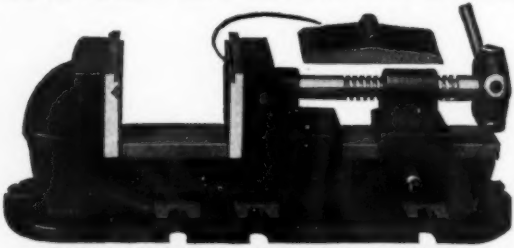
We Specialize In Hollow Boring

LATHE SPINDLES
SPINDLE SLEEVES
PISTON RODS
RAMS
HYDRAULIC CYLINDERS, etc., etc.
ANY GRADE OF STEEL—CARBON OR ALLOY.

Send Blueprints for Estimates

AMERICAN HOLLOW BORING CO.
1035 WEST NINETEENTH ST., ERIE, PA.

HOLD EVERYTHING



GEM DRILL PRESS VISES

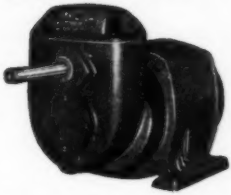
MADE IN 3 SIZES

BOOKLET DESCRIBES OUR ENTIRE LINE

J. E. Martin Tool & Die Works

518 W. State St., ***Established 1912*** **Springfield, Ohio**

SPEED REDUCERS



Helical Geared
Self-lubricating

MOTORIZED GEAR DRIVE

Single reduction type offset drive, ball bearing mounted. Semi-steel housings doweled to motor. Four positions available. Maximum ratios: reduction 6 to 1; acceleration 2 to 1. ⅛ to 3 H. P.

Write for Bulletin 100

Abart GEAR AND MACHINE CO.
MANUFACTURERS OF
Speed Reducers & Gears
4832 WEST 16TH ST. CHICAGO, ILLINOIS

GRONKVIST DRILL CHUCKS

ARE KEYLESS

DRILLS CHANGED WHILE SPINDLE IS RUNNING!

CANNOT SLIP OR INJURE DRILL SHANKS!

•

CATALOG ON REQUEST

•

SWEDISH GAGE CO. OF AMERICA
7300 WOODWARD AVE., DETROIT, MICH.

EVER-KLEAR COVER LENS

For More Efficient Welding

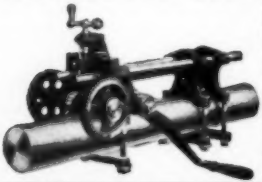
Eye strain may be the cause of weld failures. If you really want your operators to produce better work, equip them with Ever-Klear cover lens. Outlasts 40 ordinary cover glasses.

Size 2x4½" for arc-welding shields.....$2.40 per dozen
Sizes 45 to 50 mm. for goggles .....35¢ per pair

Seventh year of proved service. Dealers in principal cities.

F. R. FAULK, 405 Penn Ave., PITTSBURGH, PA.

BURR Portable Keyseaters



Indispensable for repair and maintenance work. BURR keyseaters mill keyways in the run or on the ends of shafts while they are still on the machine—accurately, quickly, economically—and save the necessity of taking down large shafts and housings. Made in 7 sizes, hand or power driven.

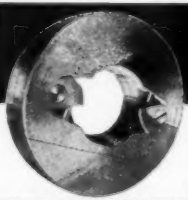
JOHN T. BURR & SON
429 Kent Ave., Brooklyn, New York

New Drill Grinding Attachment

fits the Black & Decker Grinders, gives you a correct grinding of twist drills.

PRICE ONLY $18. *Why not own one that you may be able to grind your twist drills the way they should be ground.*

Write to
C. H. CARLSON MFG. CO.
13-15 Main Street N. E.
Minneapolis, Minn.

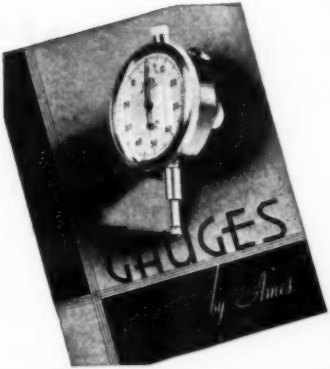


SENECA FALLS
Automatic
WORK DRIVER

Self Centering . . . Quick Acting . . . No slip. Attaches to any chuck plate or spindle. Provides a slip-proof, balanced drive reducing chatter. Handles rough forgings or turned pieces—straight or taper. Eliminates dogging time. Reduces tool breakage. Write for details and size range.

SENECA FALLS MACHINE CO., 314 Falls St., Seneca Falls, N. Y.

GET COMPLETE DATA ON AMES GAUGES



YOUR FREE COPY IS NOW READY

WRITE FOR IT!

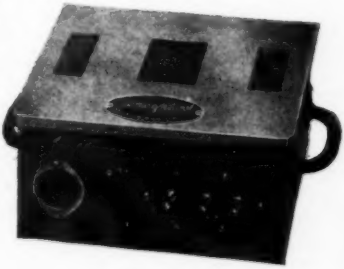
B. C. AMES COMPANY
WALTHAM, MASS.

NEW Combination Etchograph and De-Magnatool

For Marking and Demagnetizing Iron and Steel Tools or Parts.

A Tool Room Necessity for Identifying *and for* Prolonging Life of Cutting Tools

Write for Literature



William Brewster & Co., Inc.
42 Church St., New York, N. Y.

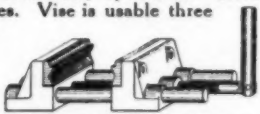
The Only Indicator With Two Live Ends

Scientifically designed for extreme sensitiveness combined with ruggedness. Soft, smooth action and high magnifying power. Two live ends —inside and outside to .001". Write for illustrated bulletin and prices.

KOCH TEST INDICATOR 29 2nd Ave., NYACK, N. Y.

OWN A REAL DRILL VISE

Jaws 5 in. wide, hardened, reversible; open 5 in. Hold round, square and odd shapes. Vise is usable three ways. Satisfaction or no obligation to you.



Write for information and folder.

Only $12.50

JOHNSON TOOL CO., Inc., 65 Massasoit Avenue, East Providence, R. I.

Engineers, Designers and Welding Users

AVOID COSTLY MISTAKES

Find the Right Answer to All Welding Problems in the New

Procedure Handbook of Arc Welding Design & Practice

586 Pages. Over 700 Illustrations

• Procedure Handbook is the most valuable work of its kind ever published. Recognized everywhere as the authority on electric welding. Used by prominent engineering schools and thousands of industrial plants.

New edition contains complete and accurate data on all latest arc welding applications and design procedures—everything you need. *Order your copy now!*

HITCHCOCK PUBLISHING CO.
508 S. Dearborn Street
CHICAGO, ILL.

• *This New Handbook may save you thousands of dollars.*

ORDER YOUR COPY NOW

POSTPAID

• *Printed on fine paper with semi-flexible binding of simulated leather, gold embossed; size 6x9 inches.*

UNIVERSAL
DRILL BUSHINGS

MADE TO A. S. A. SIZES
MEET ALL YOUR REQUIREMENTS
WITH A 10% SAVING IN COST

INTERCHANGEABLE
LONG-LIFE
EASILY
REPLACEABLE
PROMPT SERVICE

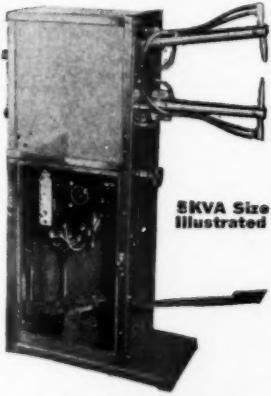
- WRITE FOR CATALOG -

UNIVERSAL ENGINEERING CO.
FRANKENMUTH, MICHIGAN

ARMGLO WELDERS

for 100% welds

ARMGLO automatic timing produces perfect welds, increases production and reduces time costs. To build up your profits, investigate **ARMGLO** welders. Made in sizes from 5 to 200 KVA, foot, motor and air operated.

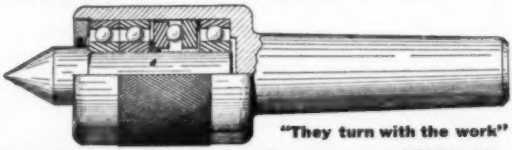


8KVA Size Illustrated

Send samples for test welds with your inquiry

ARMGLO CO., 3530 W. Pierce St., MILWAUKEE, WIS.

"ALIVE" BALL BEARING CENTERS



"They turn with the work"

Modern Machine Corp., 323 BERRY ST., BROOKLYN, N.Y.

SMOOTH!

L-R Type IA

FLEXIBLE COUPLING

Used by scores of leading manufacturers as standard equipment on small machines from 3/16" to 2¾" shaft size. No metal-to-metal contact. Write

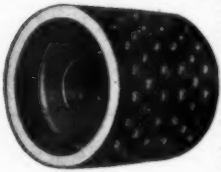
Lovejoy Flexible Coupling Co.
5026 W. Lake St. CHICAGO

HOW

—can our advertisers know that your inquiry comes from Hitchcock's Machine Tool Blue Book unless you tell them? When writing them, won't you kindly say just where you saw their ad?

Thank you!

Vacuum Cup Metal Pulley



Revolutionizes pulley performance. The only pulley on the market with the vacuum principle. Guaranteed to eliminate slippage and increase life of belts and equipment. Adaptable for short center drives. ***Write for descriptive folder. Sent on 30 days' trial.*** Motor pulleys and pulleys up to 72" diameter.

VACUUM CUP METAL PULLEY CO. INC.

1010 Ford Building, Detroit, Mich.

Motorize with Steege Drives

Equip Your Lathes, Shapers, Millers, etc., with

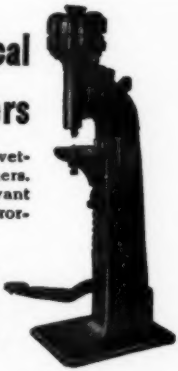
Steege Drives

Easily Installed $35.00 up

Write for Catalog

W. L. Steege Machinery Co.
20 S. Clinton Street Chicago

GRANT Economical Noiseless Riveters



GRANTS produce highest quality riveting at a speed that far surpasses all others. You get the rivets exactly as you want them—tight or loose—and with a mirror-like finish.

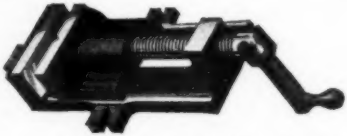
GRANTS head rivets from smallest to ⅝" diam., either by the Noiseless Spinning or the Rotary Vibratory method.

Get full information on the Pioneer Riveters (35 yrs.) and send samples of your work

THE GRANT MFG. & MACHINE CO.
C. E. Station, Bridgeport, Conn.

Eliminate Special and Costly Drill Jig Fixtures

By Using YOST Drill Press Vises



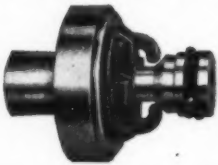
Heavily constructed, with flanges on base for easy attachment. "V" shaped slot holds vertical work securely.

Write for circular 2-H

YOST MFG. CO., Meadville, Penna.

SLEEVE CLUTCHES—CLUTCH PULLEYS

DISC TYPE



The Carroll single plate disc type clutch was adopted by us in 1913. The disc type clutch today is by far the most popular type. Modernize your countershaft. It will cost you little for this lasting service. *Write today*

L. W. Carroll Mfg. Co.
2046 Ross Ave., Norwood, Ohio

Sheet Metal Cut To ANY Size Or Shape

THE BEVERLY is made in two sizes: No. 1, weighs 16½ lbs., cuts up to 14 gauge. No. 2, weighs 32 lbs., cuts up to 10 gauge.

Write for Circular and Prices

Beverly Throatless Shear Co.
3007 W. 110th Place Chicago, Ill.

CENTERLESS

COMMERCIAL CENTERLESS GRINDING COMPANY

Contract Centerless Grinding
Accuracy—Prompt Service

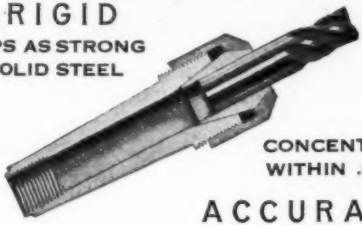
6538 Carnegie Ave., Cleveland, Ohio

GRINDING

UNIVERSAL COLLET CHUCKS

RIGID

GRIPS AS STRONG AS SOLID STEEL



CONCENTRIC WITHIN .001

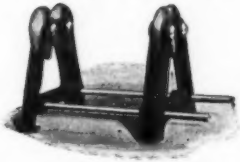
ACCURATE

WRITE FOR CATALOG

UNIVERSAL ENGINEERING CO.

FRANKENMUTH, MICHIGAN

ANDERSON Improved Balancing Ways



Four Chilled iron discs rotate on sensitive special bearings.

No Leveling Required

A simple and excellent device for balancing straightening and truing.

Swing	Greatest Distance Between Standards	Capacity in lbs.
20 in.	20 in.	1,000
40 in.	30 in.	2,000
60 in.	30 in.	2,000
72 in.	66 in.	5,000
96 in.	88 in.	10,000

Write for Full Information

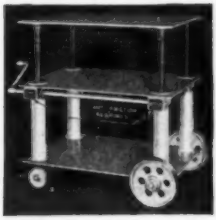
Anderson Bros. Mfg. Co.

1907 Kishwaukee Street, ROCKFORD, ILLINOIS

GRINDING WHEEL DRESSERS

Write for catalog "H" on Dressers and Cutters—no obligation

THE DESMOND-STEPHAN MFG. CO.
URBANA, OHIO



Using Hamilton Elevating Tables

in your tool room or stamping shop, one man will handle dies that formerly required two to three men to lift. Send for our illustrated circular and see for yourself the many jobs to which this handy tool adapts itself.

The Hamilton Tool Co.
Hamilton, Ohio, U. S. A.

CARROLL
Universal Dividing Heads

Twenty Years of Popularity.
"Quality at a reasonable price"

6-inch, 10½-inch and 12-inch swing. Furnished either Right or Left hand type, for all makes of plain or universal milling machines.

See your Dealer or write for bulletin showing complete line

Wm. Carroll & Son
1776 Lexington Ave. (Norwood) Cincinnati, Ohio

A CHAIN

The advertisers in the Blue Book pay Hitchcocks. They send you the Blue Book free. You buy the articles advertised. So far, so good.

BUT—

—suppose the advertisers do not know that you saw their ad in the Blue Book, how will Hitchcocks get credit? When writing to advertisers, won't you kindly mention our name? Thanks!

Gusher Coolant Pump

A Complete, Portable Unit

This portable pump and tank combination is a complete pumping unit, easily moved about and always ready for use. Ball bearing motor delivers steady volume at low pressure.

Gusher pumps need no priming, have no foot valves and are so constructed that chips and abrasives pass through them without injuring the mechanism. Centrifugal seal eliminates packing.

There's a Ruthman pump for your machines. Send today for information

The Ruthman Machinery Co.
538 E. Front St., Cincinnati, Ohio

In Spite of Precautions

Taps Break in the Hole

That's bad enough—but the real expense comes in stripping the threads when you remove the broken tap.

The Walton Tap Extractor

offers an effective, instantaneous way of overcoming this loss. Its steel fingers inserted in the broken tap remove it intact. An apprentice can operate it!

Made in two, three and four-flute styles

Often pays for itself in the 60 day trial allowed

The Walton Company
95 Allyn St., Hartford, Conn.

Save

WHEN PUNCHING HOLES OR NOTCHES in flat sheets, by using WALES DIES. They are individual, self-contained units. NO DIE SETTING REQUIRED. NEVER OBSOLETE: simply re-set them for new parts. Scattered holes are made by punch press set-ups, line work in press brakes. Standard holes up to ⅞", square notches up to 5x5—also Vee notches—in 14 gauge steel or under. Write for catalog.

THE STRIPPIT CORP., 1559 Niagara St., Buffalo, N. Y.

Ask for catalog RW illustrating a great many shapes and sizes of rotary files and rasps.

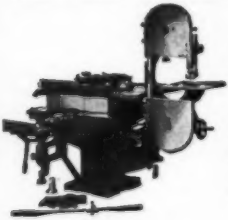
Ask also for catalog NW, illustrating more than 4000 different precision Swiss files.

GROBET FILE CORP. OF AMERICA
3 Park Place, New York City

WHY NOT MODERNIZE

your present equipment, by using the RUSSELL BORING BAR? Bores holes from 9/16" to 12" dia. with axis of boring bar parallel to axis of the shank, in one compact tool, with micrometer adjustment.

RUSSELL BORING BAR CO.
MIDDLETOWN, OHIO *Ask for illustrated folder.*

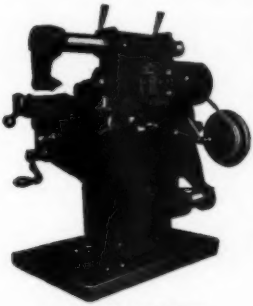


TANNEWITZ
Quality Woodworker

4 Machines at the price of ONE.

A Band Saw, Saw Table, Jointer and Mortiser, For Pattern Shop, Shipping Room or Elsewhere—Portable!

THE TANNEWITZ WORKS,
Grand Rapids, Mich.



Burke No. 4 Miller

Small Work Is Often Hardest

Burke motor driven milling machines Nos. 1, 2, 3 and 4 are especially suited for the rapid handling of small, difficult work on a production basis. Conveniently located reversing switch and simple controls help to speed up operations and to bring down production costs.

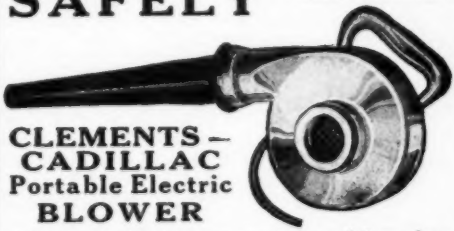
Write to Burke today for full information

BURKE Machine Tool Co.

297 E. 16th St., Conneaut, Ohio

CLEANS SAFELY

MOTORS - GENERATORS - SWITCHBOARDS - CONVERTORS AND ALL INTRICATE MACHINERY.



CLEMENTS — CADILLAC Portable Electric BLOWER

A Clements-Cadillac is safe because it always delivers *clean*, dry air, free from oil or water, at high velocity yet very low pressure. Cannot injure delicate windings or intricate machinery.

Write for free trial offer.

CLEMENTS MFG. CO.

6650 So. Narragansett Ave. Chicago, Illinois

Efficiency Men Take Notice

MIDWEST

Portable Hydraulic Elevating Tables

One man handles work that formerly required three or four men to lift. Hydraulic-operated by foot lever, up and down, carrying a capacity of 2000 pounds. Built for service by

Midwest Tool & Engineering Co.

112 Webster Street, Dayton, Ohio

Write for illustrated circular

---

40 TYPES OF MEYLAN STOP WATCHES

A watch for every purpose

Ask for FREE folder No. 6H fully illustrating and describing some 40 types of stopwatches. No salesmen will call.

REPAIR SERVICE

for all kinds of plain and complicated stopwatches. Send to us for estimates; no charge, no obligation.

A. R. & J. E. MEYLAN

"Specialists in timing instruments"

266-68 West 40th St., New York City

STEELGRIP BELT LACING

Specify STEELGRIP for strength, for conveyor belts and heavy drives . . . for rubber and fabric belts (compresses ends and prevents fraying.) Goes on with a hammer. 2-piece hinged rocker pin takes up wear. 8 sizes. ***Write for Prices.***

ARMSTRONG-BRAY & CO.

"The Belt Lacing People"

315 N. Sheldon St. Chicago, U.S.A.

McMAHON

Adjustable Angle Plate

For grinding any angle accurately.

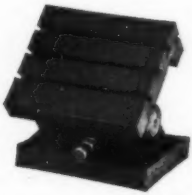
Made in two sizes

Model "A" with T slots 3½x3½....Price $12.
Model "D" with tap hole 6x7½.....Price $30.

Desirable territory open for dealers

FRANK McMAHON CO.

1320 Richard St., Dayton, O.



MODERNIZE YOUR BEARING PROTECTION WITH

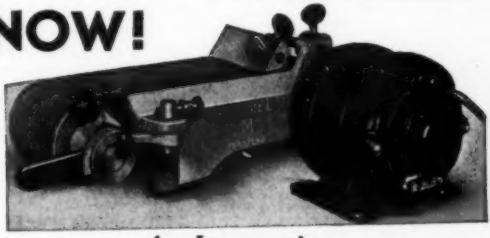
Send for complete catalog of Gits lubricating devices.

GITS BROS. MFG. CO.

1848 S. KILBOURN AVE., CHICAGO, ILL.

MANUFACTURERS OF QUALITY LUBRICATING DEVICES SINCE 1911

NOW!



An Inexpensive

ABRASIVE BAND GRINDER—

"Built Like A Machine Tool"

The Hormel-M Grinder is sturdily built with a supporting leg under the grinding table to eliminate vibration and tipping due to pressure on belt. Ball bearing throughout, equipped with Alemite lubrication, complete with grease gun. *Write for illustrated folder on this and other styles and sizes.*

HORMEL-M GRINDER

WALLS SALES CORP., 96 Warren St., New York, N. Y.

PYRO THE SIMPLIFIED OPTICAL PYROMETER

THE ONLY SELF-CONTAINED DIRECT READING, RUGGED AND FOOL-PROOF INSTRUMENT FOR PLANT AND LABORATORY

Unique construction enables operator to rapidly determine temperature even on minute spots, fast moving objects or the smallest streams; no correction charts, no accessories, no upkeep.

THE PYROMETER INSTRUMENT CO.
102-105 Lafayette St.
New York

Champion Emery Wheel Dressers and Cutters

(Superior in quality and design)

Write for Catalog

The Western Tool & Mfg. Co.

SPRINGFIELD, OHIO

WODACK "COMBI"

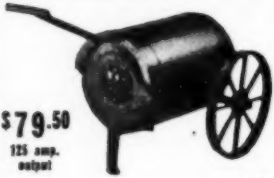
2-Speed Drill and Grinder

Specially adapted to machine shop work. High speed of 2300 RPM for drilling small holes and for grinding; low speed of 425 RPM for larger holes to 5/8". 3 tools in one. Full ball bearing. Drill stand for bench drilling. Ask for Bulletin.

Wodack Electric Tool Corp.,

4629 W. Huron St., Chicago, Ill.

UNIVERSAL Portable A. C. Welder



$79.50

125 amp. output

This Welder Stays Cool

Four connections give four different heats at each voltage for all types of light and heavy metals. Easily portable.

Write for new circular

Universal Power Corp.

4300 Euclid Ave., Cleveland, Ohio

You Can't Beat a HANDNIB

for Toolroom—and Experimental Work

Save 90% on templates, trial blanks by elimination of costly hand work.

Six different models for inside nibbling, outside nibbling, shearing, drillrod cutting or punching are easily mounted on a vise or bench.

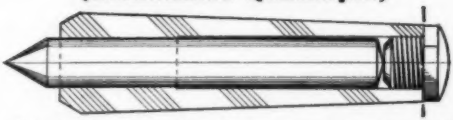
Write for full descriptions

Above Model No. 4 has a capacity of 3/16" flat stock

NATIONAL MACHINE TOOL CO.
1536B Clark Street, Racine, Wis.

RIGID TRIPLE-LIFE CENTER

(Sometimes Quadruple)



An Ideal Head-Stock & Stationary Center, of low Cost & High value. Its Special Hi-Speed Insert is Pressed in, per ton, from rear. It saves ⅓ on first tool & ⅔ on subsequent Inserts. Where it starts it Stays.

RIGID TOOL HOLDER CO.
2000 Witherell St., :-: Detroit, Michigan

Classified Finding Index

Abrasive Cut-off Machines
Challenge Mchy. Co., Grand Haven, Mich.
Tannewitz Works, Grand Rapids, Mich.

Air Cylinders
Tomkins-Johnson Co., Jackson, Mich.

Air Valves
Galland-Henning Mfg. Co., Milwaukee, Wis.
W. H. Nicholson & Co., Wilkes-Barre, Pa.

Air Velocity Meters
Illinois Testing Laboratories, 150 W. Austin Ave., Chicago, Ill.

Angle Dressers
Visco Tool Co., Detroit, Mich.

Angle Plates, Adjustable
McMahon Co., Frank, Dayton, Ohio

Arbor Presses
Atlas Press Co., Kalamazoo, Mich.
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Wilson K. R., Buffalo, N. Y.

Arbor Presses, Air Operated
Tomkins-Johnson Co., Jackson, Mich.

Balancing Ways
Anderson Bros. Mfg. Co., Rockford, Ill.

Baling Presses
Galland-Henning Mfg. Co., Milwaukee, Wis.

Band Saw Machines, for Metal
Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Grob Bros., West Allis, Wis.
Oliver Machinery Co., Grand Rapids, Mich.
Tannewitz Works, Grand Rapids, Mich.
Wells Mfg. Co., Three Rivers, Mich.

Band Saws, Open End
Grob Bros., West Allis, Wis.

Bar Cutters
Buffalo Forge Company, Buffalo, N. Y.

Bearings
Chicago Die Casting Mfg. Co., 2802 W. Monroe St., Chicago

Belt Lacing
Armstrong-Bray & Co., 315 N. Sheldon St., Chicago, Ill.

Belt Sanders
Sklisow, Inc., 3304 Elston Av., Chicago, Ill.

Belts, V-Type
elts Mfg. Co. Milwaukee, Wis.

Bench Legs, Steel
andard Pressed Steel Co., Jenkintown, Pa.

Bench Lathes
sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Hardinge Brothers, Inc., Elmira, N. Y.

Bench Punches
Whitney Mfg. Co., W. A., Rockford, Ill.

Bending Machines, Hand and Power
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Buffalo Forge Company, Buffalo, N. Y.
Lewthwaite Mchs. Co., 7-11, 311E. 47th., N.Y.

Bins
Stackbin Corp., Providence, R. I.

Blow Guns
Enoex Brass Corp., Detroit, Mich.

Blowers
Breuer Elect. Co., 846 Blackhawk St., Chgo.
Buffalo Forge Co., Buffalo, N. Y.
Clements Mfg. Co., 6650 Narragansett, Chicago
General Blower Co., 401 N. Peoria St., Chicago
Standard Electrical Tool Co., Cincinnati O.

Blowers, Portable Electric
Breuer Electric Co., 846 Blackhawk St., Chgo.
Buffalo Forge Co., Buffalo, N. Y.
Clements Mfg. Co., 6650 Narragansett, Chicago
Sklisow, Inc., 3304 Elston Av., Chicago, Ill.

Bolts and Nuts
Triplex Screw Co., Cleveland, Ohio

Boring Bars
Rigid Tool Holder Co., Detroit, Mich.
Russell Boring Bar Co., Middletown, Ohio

Boring Heads
Flynn Manufacturing Co., Detroit Mich.
Rickert-Shafer Co., Erie, Pa.

Boring Machines
Cleveland Mchs. Tool Co., Green Bay, Wis.
R & L Tools, Nicetown, Phila., Pa.
Rickert-Shafer Co., Erie, Pa.

Broaching Machine Tools
Colonial Broach Co., Detroit, Mich.

Broach Sharpening Machines
Colonial Broach Co., Detroit, Mich.

Broaches, Spline and Square
Colonial Bushings Co., Detroit, Mich.
Taylor Machine Co., Cleveland, Ohio

Brakes, Hand and Power
Alistee Press Co., 12015 S. Peoria St., Chicago
Dreis & Krump Mfg. Co., 7440 So. Lonsdale Blvd., Chicago, Ill.

Brazers, Electric
Grob Brothers, Grafton, Wis.
Oliver Machinery Co., Grand Rapids, Mich.

Briquetting Machines
Grob Bros., West Allis, Wis.

Buffers, Bench
Hammond Mchy. Builders, Inc., Kalamazoo, Mich.
Rotor Air Tool Co., Cleveland, Ohio
Valley Electric Corp., St. Louis, Mo.
Vonnegut Moulder Corp., Indianapolis, Ind.

Buffers, Pedestal
Valley Electric Corp., St. Louis, Mo.
Vonnegut Moulder Corp., Indianapolis, Ind.

Burs, Steel
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Bushings, Steel
Acme Industrial Co., 210 N. Laflin St., Chicago, Ill.
Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago
Universal Eng. Corp., Frankenmuth, Mich.

Bushings, Jig
Acme Industrial Co., 210 N. Laflin St., Chicago, Ill.
Colonial Bushings Co., Detroit, Mich.

Call Systems
Wyrenbeck & Staff, Inc., 642 Washington Blvd., Chicago

Cams, Alloy Steel
Modern Collet & Mchs Co., Boerne, Mich.

Cams
Banner Mfg. Co., 1873 Clybourn Av., Chgo.

Cap Screws
Triplex Screw Co., Cleveland, Ohio

Centering Machines
Cullman Wheel Co., 1350 Altgeld St., Chgo.

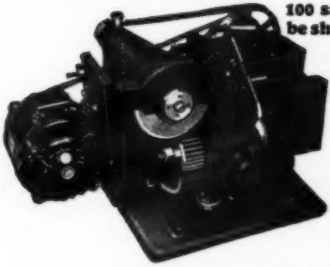
Centers, Lathe
Rigid Tool Holder Co., Detroit, Mich.
Modern Mchs. Corp., Brooklyn, N. Y.

Chains, Silent and Roller
Chicago Gear Works, 709 W. Jackson Blvd., Chicago
Cullman Wheel Co., 1350 Altgeld St., Chgo.

Chamfering Machines, Automatic
Grant Mfg. & Mchs. Co., Bridgeport, Conn.

WARDWELL No. 35T AUTOMATIC SAW SHARPENER

Sharpens Metal Saws in Gangs



100 saws of 26 gauge can be sharpened at one time

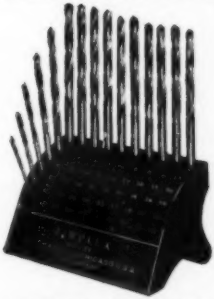
Milling, Slitting and Screw Slotting saws from 2" to 5½" diameter can be sharpened in gangs up to 1¾" in thickness, with tooth spacing up to ¾".

The saws are automatically indexed and sharpened within a variation of plus or minus .001 of exact diameter of entire lot.

Circular Free Upon Request

WARDWELL MFG. CO. 3165 Fulton Rd., CLEVELAND, O.

Don't Look for a Needle in a Haystack



SIMPLEX

Drill Stand

The Friend of the Mechanic—Has These Exclusive Features

1. All drills and numbers face the mechanic.
2. The six horizontal radially spaced rows of drills provide ease in extracting even the smallest drill.
3. The largest fingers will find it easy to pick any drill.
4. The horizontal and vertical arrangements of the numbers can be easily appreciated.
5. A well balanced, precision, zinc die cast product.
6. A great time saver.

Moderately Priced

$1.00 size has drill holes numbered from 1 to 60.

$1.25 size has 32 drill holes graduated in 1/64" sizes from 1/16" to ½".

Immediate Shipments

E. TOMAN & CO.

2621 W. 21st Place, CHICAGO, ILL.

Classified Finding Index

Chasers, Thread
Jones & Lamson Mchs. Co., Springfield, Vt

Chucks
Ettco Tool Co., 594 Johnson Av., Brooklyn, N. Y.
Hauser Mfg. Co., 1600 No. Paulina St., Chicago, Ill.
Universal Eng. Corp., Frankenmuth, Mich.

Chucks, Air
Tomkins-Johnson Co., Jackson, Mich.

Chucks, Automatic
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago

Chucks, Collet
Apex Machine Co., Dayton, Ohio
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago
Tomkins Johnson Co., Jackson, Mich.

Chucks, Drill and Tap
Apex Machine Co., Dayton, Ohio
Errington Mach. Labo. Staten Island, N. Y.
Ettco Tool Co., Brooklyn, N. Y.
Hartford Special Mchy. Co., Hartford, Conn.
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago
Scully-Jones & Co., 1905 S. Rockwell St., Chicago, Ill.

Chucking Fingers
Modern Collet & Mchs. Co., Ecorse, Mich.
Morrison Mach. Products, Inc., Elmira, N. Y.

Chucks, Quick Change
Procunier Safety Chuck Co., 14 So. Clinton St., Chicago

Clutches, Friction
Carroll Mfg. Co., L. W., Cincinnati, O.
Conway Clutch Co., Cincinnati, Ohio

Cold Saws
Burke Machine Tool Co., Conneaut, Ohio

Collets for all Lathes and Millers
Apex Machine Co., Dayton, Ohio
Hardinge Brothers, Inc., Elmira, N. Y.
Modern Collet & Mchs. Co., Ecorse, Mich.
Sutton Tool Co., Detroit, Mich.
Universal Eng. Corp., Frankenmuth, Mich.

Collets for Auto. and Hand Screw Machines
Morrison Mach. Products, Inc., Elmira, N. Y.
Sutton Tool Co., Detroit, Mich.

Collets, Spring
Modern Collet & Mchs. Co., Ecorse, Mich.
Morrison Mach. Products, Inc., Elmira, N. Y.

Collet Tubes
Modern Collet & Mchs. Co., Ecorse, Mich.
Sutton Tool Co., Detroit, Mich.

Comparators
Federal Products Corp., Providence, R. I.
Jones & Lamson Mchs. Co., Springfield, Vt.

Contract Work Wanted
Burke Machine Tool Co., Conneaut, O.

Core Drills
Gairing Tool Co., Detroit, Mich.

Counterbores
Gairing Tool Co., Detroit, Mich.
Scully-Jones & Co., 1905 S. Rockwell St., Chicago, Ill.

Couplings, Belt
Armstrong-Bray & Co., 315 N. Sheldon St., Chicago

Couplings, Compression Shaft
W. H. Nicholson & Co., Wilkes Barre, Pa.

Couplings, Flexible
Ajax Flexible Coupling Co., Westfield, N.Y.
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Lovejoy Flex. Coupling Co., 5026 Lake, Chic.

Couplings, Friction Clutch
Conway Clutch Co., Cincinnati, Ohio

Couplings, Shaft
Ajax Flexible Coupling Co., Westfield, N.Y.
Faulk, F. R., 406 Penn Av., Pittsburgh, Pa.
W. H. Nicholson & Co., Wilkes-Barre, Pa.

Cut-off Machines
Modern Mach ne Tool Co., Jackson, Mich.
Rasmussen Machine Co., Racine, Wis.

Cut-off Saws
Oliver Machinery Co., Grand Rapids, Mich.
Tannewitz Works, Grand Rapids, Mich.

Cutters
Putnam Tool Co., Detroit, Mich.
Progressive Tool & Cutter Co., Ferndale, Mich.
Tomkins-Johnson Co., Jackson, Mich.
Welden Tool Co., Cleveland, Ohio

Cutters, Milling
Brown & Sharpe Mfg. Co., Providence, R.I.
Modern Machine Tool Co., Jackson, Mich.
Scully-Jones & Co., 1905 S. Rockwell St., Chicago, Ill.

Cutters, Gear
Michigan Tool Co., Detroit, Mich.

Cutters, Keyway
Scully-Jones & Co., 1905 S. Rockwell St., Chicago, Ill.

Demagnetizers
Lunn Electric Equipment Co., Toledo, Ohio
L-W Chuck Co., Toledo, Ohio
Printz Electric Co., Detroit, Mich.

Dies, Blank and Forming
American Tool Works, Inc., Hartford, Conn.
Hamilton Tool Company, Hamilton, Ohio
Rickert-Shafer Co., Erie, Pa.

Die Casting Machines
Madison-Kipp Corp., Madison, Wis.

Die Castings
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago
Madison-Kipp Corp., Madison, Wis.

Die Filers
Continental Mchs. Specialties, Minneapolis
Grob Brothers, Grafton, Wis.

Die Heads, Self-Opening
Apex Machine Co., Dayton, Ohio

Die Making Machines
Armglo Co., Milwaukee, Wis.
Continental Mchs. Specialties, Minneapolis
Grob Brothers, Grafton, Wis.
Henry & Wright Mfg. Co., Hartford, Conn.
Oliver Machinery Co., Grand Rapids, Mich.
Oliver Instrument Co., Adrian, Mich.

Die Sets
Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

Die Sinking and Engraving Machines
Pratt & Whitney Co., Hartford, Conn.

Dies, Hole Punching
Stripplt Corp. Buffalo, N. Y.

Dies, Notching
Stripplt Corp., Buffalo, N. Y.

Dividing Heads
Wm. Carroll & Son, Norwood, Cincinnati, O.
Master Machine & Tool Co., North Kansas City, Mo.

Dowel Pins, Steel
Acme Industrial Co., 210 N. Laflin St., Chicago, Ill.
Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

Draftsmen's Tables
Hamilton Mfg. Co., Two Rivers, Wis.

Dressers, Angle Tangent to Radius
Vinco Tool Co., Detroit Mich.

Drills and Taps
Ettco Tool Co., 594 Johnson Av., Brooklyn, N. Y.

Type CC

GRIND YOUR CIRCULAR KNIVES AT LOW COST

Up to 20 in. Dia.
Any Degree of Bevel
New, Improved Features

UNUSUALLY LOW PRICE!
Write for Bulletin C

S. C. ROGERS & CO., Buffalo, N. Y.
Makers of Grinders for 50 Years

ROGERS CIRCULAR KNIFE GRINDER

Engineers, Designers and Welding Users

AVOID COSTLY MISTAKES

Find the Right Answer to All Welding Problems in the New

Procedure Handbook of Arc Welding Design & Practice

586 Pages. Over 700 Illustrations

• Procedure Handbook is the most valuable work of its kind ever published. Recognized everywhere as the authority on electric welding. Used by prominent engineering schools and thousands of industrial plants.

New edition contains complete and accurate data on all latest arc welding applications and design procedures—everything you need. *Order your copy now!*

HITCHCOCK PUBLISHING CO.
506 S Dearborn Street
CHICAGO, ILL.

• ***This New Handbook may save you thousands of dollars.***

ORDER YOUR COPY NOW

• ***Printed on fine paper with semi-flexible binding of simulated leather, gold embossed; size 6 x 9 inches.***

Classified Finding Index

Drill Bushings
Acme Industrial Co., 230 N. Laflin St., Chicago, Ill.
Universal Eng. Corp., Frankenmuth, Mich.

Drill Holders
E. Toman & Co., 2621 W 21st Place, Chgo.

Drills, Electric
Skilsaw, Inc., 3304 Elston Av., Chicago, Ill.
SpeedWay Mfg. Co., 1322 So. 52nd Ave., Cicero, Ill.
Standard Electrical Tool Co., Cincinnati, O.
Tamco Electric Motor Co., Leipsic, Ohio
Wodack Electric Tool Corp., 2529 W Huron St., Chicago, Ill.

Drill Grinders
Star Mchs. & Eng. Co., Bloomfield, N. J.

Drill Holder Bushings
Banner Mfg. Co., 1873 Cityburn Av., Chgo.

Drill Jigs, Special
Hoeser Mfg., Co., 1636 No. Paulina St., Chicago, Ill.

Drill Jigs, Universal
Hoeser Mfg. Co., 1636 No. Paulina St., Chicago, Ill.

Drilling Attachments, High Speed
Graham Manufacturing Co., Providence, R.I.
Dalras Tools Co., Syracuse, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.

Drilling Machines, Bench
Atlas Press Co., Kalamazoo, Mich.
Buffalo Forge Company, Buffalo, N. Y.
Cleveman Mchs. Tool Co., Green Bay, Wis.
High Speed Hammer Co., Rochester, N. Y.

Drilling Machines, Multiple Spindle
Buffalo Forge Co., Buffalo, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.

Drilling Machines, Portable Electric
Skilsaw, Inc., 3304 Elston Av., Chicago, Ill.
SpeedWay Mfg. Co., 1322 So. 52nd Ave., Cicero, Ill.
Strand Co., N. A., 5001 N. Lincoln Street Chicago, Ill.
Tamco Electric Motor Co., Leipsic, Ohio
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Drilling Machines, Post
Buffalo Forge Co., Buffalo, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.

Drilling Machines, Radial
Henry & Wright Mfg. Co., Hartford, Conn.
Western Machine Tool Wks., Holland, Mich.

Drilling Machines, Sensitive
Atlas Press Co., Kalamazoo, Mich.
Buffalo Forge Company, Buffalo, N. Y.
Burke Machine Tool Co., Conneaut, Oh
Henry & Wright Mfg. Co., Hartford, Conn.

Drilling Machines, Vertical
Atlas Press Co., Kalamazoo, Mich.
Buffalo Forge Company, Buffalo, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.

Drives, Lathe
Cullman Wheel Co., 1339 Altgeld St., Chgo.
Hardings Brothers, Inc., Elmira, N. Y.

Electric Motors with Integral Brakes
Star Mchs. & Eng. Co., Bloomfield, N. J.

Electrical Instruments
Illinois Testing Laboratories, Inc., 180 W. Austin Ave., Chicago

Elevating Tables
Hamilton Tool Company, Hamilton, Ohio
Midwest Tool & Engineering Co., Dayton, O.

Emery Stands
Carroll Mfg. Co., L. W., Cincinnati, O.

Emery Wheel Dressers and Cutters
Desmond Stephan Mfg. Co., Urbana, Ohio
Western Tool & Mfg. Co., Springfield, O.

End Mills
Progressive Tool & Cutter Co., Ferndale, Mich.
Putnam Tool Co., Detroit, Mich.
Weldon Tool Co., Cleveland, Ohio

Etching Machines, Electric
Brewster Co. William, 50 Church St., N.Y.C.
Lima Electric Equipment Co., Toledo, Ohi.
Prints Electric Co., Detroit, Mich.

Exhaust Blowers
Buffalo Forge Co., Buffalo, N. Y.

Experimental Work
American Tool Works, Inc., Hartford, Conn.

Feeder Tubes
Sutton Tool Co., Detroit, Mich.

Feed Fingers
Morrison Mach. Products, Inc., Elmira, N.Y.

Feed Fingers for Auto. Screw Mchs.
Modern Collet & Machine Co., Ecorse, Mich.
Sutton Tool Co., Detroit, Mich.

Files
Grobet File Co., 8 Park Place, New York City

Files, Rotary
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Filing Machines
Continental Mchs. Specialties, Minneapolis
Grob Bros., West Allis, Wi.
Oliver Instrument Co., Adrian, Mich.

Filing Room Equipment
Wardwell Manufacturing Co., Cleveland, O.

Flexible Couplings
Ajax Flexible Coupling Co., Westfield, N.Y.
Lovejoy Flex. Coupling Co., 5026 Lake, Chgo.

Flexible Shafts and Accessories
Wyssenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Flexible Shaft Couplings
Lovejoy Flex. Coupling Co., 5026 Lake, Chgo.
W. H. Nicholson & Co., Wilkes-Barre, Pa.

Flexible Shaft Machinery
Haskins Co., H. G., 4654 W. Fulton, Chgo.
Pratt & Whitney Co., Hartford, Conn
Wyssenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Floating Holders
Galring Tool Co., Detroit, Mich.

Forgings, Hollow Bored
American Hollow Boring Co., Erie, Pa.

Forming Tools
Banner Mfg. Co., 1876 Cityburn Av., Chgo.
Michigan Tool Co., Detroit, Mich
Willer's Carbide Tool Co., Detroit, Mich.

Furniture, Machine Shop
Standard Pressed Steel Co., Jenkintown, Penna.
Western Tool & Mfg. Co., Springfield, O.

Gages
Federal Products Corp., Providence, R. I.
Swedish Gage Co. of Amer., Detroit, Mich.

Gages, Chrome Plated
Vinco Tool Co., Detroit, Mich.

Gages, Gears, Spur and Helical
Vinco Tool Co., Detroit, Mich.

Gages, Pin, Plug, Ring and Snap
American Tool Works, Inc., Hartford, Conn.

Gages, Taper
Hartford Special Mchy. Co., Hartford, Conn.
Vinco Tool Co., Detroit, Mich.

SpeedWay

More Tool for the Money

Portable GRINDERS

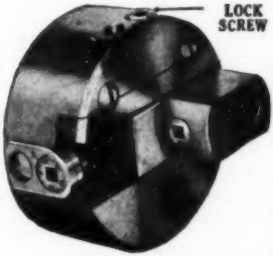
WRITE FOR CATALOG

Does a Hundred Jobs Well

Priced within range of every shop still built to industrial standards, the SpeedWay Type 123 Grinder is the lightest, handiest, most serviceable grinder built for all around use—for both precision and touch-up work. Does a hundred jobs well both as a hand tool and on lathes. Powerful motor operates on both AC and DC—takes up to 1¼ inch wheels. All aluminum construction. In case with collet, wrench and 3 grinding wheels.

SpeedWay Manufacturing Co., 1822 So. 52nd Ave., Cicero, Ill.

FLYNN MICROMETER OFFSET BORING HEADS



No. 30

This dovetail designed head is particularly useful where a large offset is required. Body is solid steel, dovetailed hardened tool holder has 2½" offset. Tension gib and locking device takes strain of micrometer screw. Dial graduated in thousandths, 50 thousandths to a turn, insuring accurate adjustment in boring. Bar capacity is ¾-⅞.

Write for information on other styles and sizes

FLYNN MANUFACTURING CO.

435 Bates St., Detroit, Mich.

Classified Finding Index

Gear Cutters
Brown & Sharpe Mfg. Co., Providence, R.I.

Gears
Abart Gear & Mchc. Co., 4832 W. 16th St., Chicago, Ill.
Chicago Gear Wks., 769 W. Jackson, Chgo.
Taylor Machine Co., Cleveland, Ohio

Gears, Master
Vinco Tool Co., Detroit, Mich.

Gears, Worm
Michigan Tool Co., Detroit, Mich.

Gear Checking Machines
Michigan Tool Co., Detroit, Mich.

Gear Makers
Star Mchc. & Eng. Co., Bloomfield, N. J.

Generators
Chicago Electric Co., 1336 W. 22nd St., Chicago, Ill.
Janette Mfg. Co., 552 W. Monroe St., Chgo.
Star Mchc. & Eng. Co., Bloomfield, N. J.

Grease Cups
Essex Brass Corp., Detroit, Mich.

Grinders, Air
Medi-no-Kipp Corp., Madison, Wis.
M-B Products, Detroit, Mich.

Grinders, Bench
Baldor Electric Co., St. Louis, Mo.
Carroll Mfg. Co., L. W., Cincinnati, O.
Hammond Machinery Builders, Kalamazoo, Mich.
Vonnegut Moulder Corp., Indianapolis, Ind.

Grinders, Disc
Oliver Machinery Co., Grand Rapids, Mich
Wyzenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Grinders, Electric
Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.
Skilsaw, Inc., 5504 Elston Av., Chicago, Ill.
Standard Electrical Tool Co., Cincinnati, O.

Grinders, Electric Bench
Baldor Electric Co., St. Louis, Mo.
Valley Electric Corp., St. Louis, Mo.

Grinder, Flexible Shaft
Haskins Co., H. G., 4654 W. Fulton, Chgo.
Mall Tool Co., 7742 S. Chicago Ave., Chicago
N. A. Strand & Co., 5031 N. Lincoln, Chgo.

Grinders, Hand
Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.
Dumore Co., Racine, Wis.
M-B Products, Detroit, Mich.
Skilsaw, Inc., 5504 Elston Av., Chicago, Ill.

Grinders, Heavy Duty
Vonnegut Moulder Corp., Indianapolis, Ind.

Grinders, High Speed
Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.
Dumore Co., Racine, Wis.
Mall Tool Co., 7742 S. Chicago Ave., Chicago
M-B Products, Detroit, Mich.

Grinders, Pedestal Electric
Baldor Electric Co., St. Louis, Mo.
Valley Electric Corp., St. Louis, Mo.

Grinders, Swing Frame
Vonnegut Moulder Corp., Indianapolis, Ind.

Grinders and Polishers, Belt
Oliver Machinery Co., Grand Rapids, Mich.
Porter-Cable Machine Co., Syracuse, N. Y.

Grinding Attachments, Drill
Carlson Mfg. Co., C. H., Minneapolis, Minn.
Oliver Instrument Co., Adrian, Mich.

Grinding, Centerless (Contract)
Commercial Centerless Grinding Co., 6528 Carnegie Ave., Cleveland, Ohio

Grinding Machines, Belt
Armgrip Co., Milwaukee, Wis.
Production Machine Co., Greenfield, Mass.
Walls Sales Corp., 96 Warren St., New York

Grinding Machines, Cutter, Reamer and Tool
Brown & Sharpe Mfg. Co., Providence, R.I.
National Machine Tool Co., Racine, Wis.
Oliver Instrument Co., Adrian, Mich.

Grinding Machines, Drill
Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Floor
Hammond Mchy. Builders, Kalamazoo, Mich.
Standard Electrical Tool Co., Cincinnati, O.

Grinding Machines, Internal
Dumore Co., Racine, Wis.
National Machine Tool Co., Racine, Wis.
Sunnen Products Co., St. Louis, Mo.

Grinding Machines, Portable Electric
Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.
Dumore Co., Racine, Wis.
H. G. Haskins Co., 4654 W. Fulton, Chicago
Mall Tool Co., 7742 S. Chicago Ave., Chicago
National Machine Tool Co., Racine, Wis.
Pratt & Whitney Co., Hartford, Conn.
Strand Co., N. A., 5031 N. Lincoln St., Chgo
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Grinding Machines, Surface
Gallmeyer & Livingston Co., Grand Rapids
Rogers & Co., Samuel C., Buffalo, N. Y.

Grinding Machines, Tap
Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Tool
Hammond Machinery Builders, Kalamazoo, Mich.
Rogers & Co., Samuel C., Buffalo, N. Y.

Grinding Machines, Universal
Brown & Sharpe Mfg. Co., Providence, R.I

Grinding Wheels
Chicago Wheel & Mfg. Co., M.C. Tool Div., 1101 W. Monroe St., Chicago, Ill.

Grinding Wheels, Mounted
Chicago Wheel & Mfg. Co., M.C. Tool Div., 1101 W. Monroe St., Chicago, Ill.

Grinding Wheels On Shanks
Chicago Wheel & Mfg. Co., M. C. Tool Div., 1101 W. Monroe St., Chicago, Ill.

Hack Saw Blades
Armstrong-Blum Mfg. Co., 841 N. Francisco Ave., Chicago
Wells Mfg. Corp., Three Rivers, Mich.

Hammers, Electric
Wedack Electric Tool Corp., 2629 W. Huron St., Chicago, Ill.

Hammers, Tinners
Whitney Mfg. Co., W. A., Rockford, Ill.

Hammers, Mallets and Mells
Chicago Rawhide Mfg. Co., 1250 Elston Av., Chicago, Ill.

Hammers, Riveting
High Speed Hammer Co., Rochester, N. Y.

Hammers, Soft Faced
Greene Tweed & Co., 109 Duane St., New York, N. Y.

Hand Pumps
Blackmer Pump Co., Grand Rapids, Mich.

Hand Punches
Whitney Mfg. Co., W. A., Rockford, Ill.

M-B PRODUCTS
FOR *POSITIVE* LUBRICATION

COMBINED AUTOMATIC AIR LINE LUBRICATOR AND FILTER

First removes water, dirt, dust, etc. from air, then saturates it with any desired volume of oil. Eliminates costly shut-downs.

PRE - DETERMINED FEED MACHINE OILER

Delivers any feed desired. No periods of "feast or famine". Steel—no crystallization. Stronger than brass. Cadmium plated throughout. Also *adjustable feed* oilers.

Write today for details

M-B PRODUCTS 128 E. Larned Street, DETROIT, MICH.

All sizes of Model B Collapsible Taps to cut inside threads up to 10" diameter. Write for catalog.

THE RICKERT-SHAFER CO.

Specialists in Thread Cutting Equipment

650 WEST 11th STREET, ERIE, PA.

Classified Finding Index

Hand Saws, Portable Electric
Skilsaw, Inc., 3204 Elston Av., Chicago, Ill.

Hand Screw Machines, Precision Bench Type
Hardinge Brothers, Inc., Elmira, N. Y.

Hangers, Ball, Roller and Babbitt
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago

Heads, Boring
Pirsu Manufacturing Co., Detroit, Mich.

Hubs
Michigan Tool Co., Detroit, Mich.

Hole Cutters
Wyzenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Hollow Adjustable Mills
Gairing Tool Co., Detroit, Mich.

Honing Machines
Sunnen Products Co., St. Louis, Mo.

Hydraulic Valves
Gallaud-Henning Mfg. Co., Milwaukee, Wis.
W. H. Nicholson & Co., Wilkes-Barre, Pa.

Index Centers
Brown & Sharpe Mfg. Co., Providence, R.I.
Wm. Carroll & Son, Norwood, Cincinnati, O.

Indicating Dials
Federal Products Corp., Providence, R. I.

Indicators, Speed
Greene Tweed & Co., 109 Duane St., New York, N. Y.

Indicators, Surface Test
Reich Mfg. Co., J. R., Dayton, Ohio

Jigs and Fixtures
American Tool Works, Inc., Hartford, Conn.
Hamilton Tool Company, Hamilton, Ohio
Hartford Special Mchy Co., Hartford, Conn

Keyseating Machines
Burr & Son, John T., Brooklyn, N. Y.

Knife Grinders
Rogers & Co., Samuel C., Buffalo, N. Y.

Knurls and Holders, for Turrets
Graham Manufacturing Co., Providence, R.I.

Lathe Centers
Modern Mchs. Corp., Brooklyn, N. Y.
Rigid Tool Holder Co., Detroit, Mich.

Lathe Drives
Cullman Wheel Co., 1889 Altgeld St., Chgo.
Hardinge Brothers, Inc., Elmira, N. Y.

Lathes, Automatic
Jones & Lamson Mchs. Co., Springfield, Vt.

Lathes, Bench
Atlas Press Co., Kalamazoo, Mich.
Delta Mfg. Co., Milwaukee, Wis.
Hardinge Brothers, Inc., Elmira, N. Y.
Hivett Lathe & Grinder Inc., Brighton, Boston
Sheldon Machine Co., 2258 Cottage Grove Ave., Chicago, Ill.
South Bend Lathe Works, South Bend, Ind.

Lathes, Back Geared
Hivett Lathe & Grinder, Inc., Brighton, Boston
South Bend Lathe Works, South Bend, Ind.

Lathes, Brake Drum
South Bend Lathe Works, South Bend, Ind.

Lathes, Engine
South Bend Lathe Works, South Bend, Ind.

Lathes, Gap Bed
South Bend Lathe Works, South Bend, Ind.

Lathes, Polishing and Buffing
Hammond Machinery Builders, Kalamazoo, Mich.

Lathes, Precision Bench
Hardinge Brothers, Inc., Elmira, N. Y.
South Bend Lathe Works, South Bend, Ind.

Lathes, Precision Bench Screw Cutting
Hardinge Brothers, Inc., Elmira, N. Y.
South Bend Lathe Works, South Bend, Ind.

Lathes, Screw Cutting
South Bend Lathe Works, South Bend, Ind.

Lathes, Speed
Schauer Machine Co., Cincinnati, Ohio

Lathes, Turret
Jones & Lamson Mchs. Co., Springfield, Vt.

Layout Tables
Parsons-Merritt Co., Detroit, Mich.
Challenge Mchy. Co., Grand Haven, Mich.

Leader Pins, Steel
Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.

Leather Belting, All Types
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.

Leather Oil Retainers
Chicago Rawhide Mfg. Co., 1200 Elston Av. Chicago, Ill.
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.

Leather Pkg., Hydraulic & Pneumatic
Chicago Rawhide Mfg. Co., 1200 Elston Av., Chicago, Ill.

Live Lathe Centers
Modern Mchs. Corp., Brooklyn, N. Y.
Sturdimatic Tool Co., Detroit, Mich.

Lubricators, Air
Essex Brass Corp., Detroit, Mich.
Fauver J. N., Detroit, Mich.
Norgren, C. A., Denver, Colorado

Lubricators, Automatic
Fauver, J. N., Detroit, Mich.
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.
Greene Tweed & Co., 109 Duane St., New York, N. Y.
Madison-Kipp Corp., Madison, Wis.
M-B Products Co., Detroit, Mich.
Norgren Co., C. A., Denver, Colo.

Lubricators, Engine
Madison-Kipp Corp., Madison, Wis.

Mandrels, Saw and Grinding
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago.

Mandrels, Expanding
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Western Tool & Mfg. Co., Springfield, O.

Marking Machines
Schmidt, Geo. T., Inc., 1802 Belle Plain Ave., Chicago, Ill.

Micrometers
Swedish Gage Co. of Amer., Detroit, Mich.

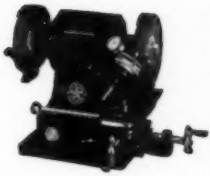
Milling Attachments
Brown & Sharpe Mfg. Co., Providence, R.I.
Burke Machine Tool Co., Conneaut, Ohio
Wm. Carroll & Son, Norwood, Cincinnati, O.
Dalrae Tools Co., Syracuse, N. Y.
Master Machine & Tool Co., North Kansas City, Mo.

Milling Machines, Bench
Burke Machine Tool Co., Conneaut, Ohio
Hardinge Brothers, Inc., Elmira, N. Y.

Milling Machines, Precision Bench
Brown & Sharpe Mfg. Co., Providence, R.I.
Hardinge Brothers, Inc., Elmira, N. Y.

Milling Machines, Hand
Burke Machine Tool Co., Conneaut, Ohio

Milling Machines, Plain
Brown & Sharpe Mfg. Co., Providence, R.I.
Burke Machine Tool Co., Conneaut, Ohio



SAVE UP TO 50% Of Drill Costs

No attachments to buy

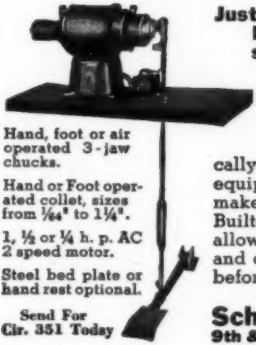
Clean, sharp drills do better work in less time. Keep your own drill equipment in first-class condition with a Star Precision drill grinder. Accurate and up-to-date, it grinds 81 sizes, including 25 fractional sizes from 1/8" to 1/2", without attachments or extras. Power is supplied by a 115 or 220-volt, A. C. or D. C. motor at 3,600 r. p. m.

Write for Illustrated Circular

STAR Machine & Engineering Corp.
Bloomfield, New Jersey

SPEED LATHES

Timesavers for your plant



Just the tools for Finishing, Polishing or Lapping of small parts.

THE very tools you've been looking for to produce those small parts quickly and economically. Eliminates tying up larger equipment with its slow and make-shift production methods. Built-in features of this new tool allow you to handle rod, tube and chuck stock better than ever before.

Hand, foot or air operated 3-jaw chucks.

Hand or Foot operated collet, sizes from 1/64" to 1 1/4".

1, 1/2 or 1/4 h. p. AC 2 speed motor.

Steel bed plate or hand rest optional.

Send For Cir. 351 Today

Schauer Machine Co.
9th & Broadway, Cincinnati, Ohio

Classified Finding Index

Motors
Chicago Electric Co., 1338 W. 22nd St., Chicago, Ill.
Janette Mfg. Co., 552 W. Monroe St., Chgo.

Motors, Small Universal
Speedway Mfg. Co., Cicero, Ill.

Motor-Generator Sets
Chicago Electric Co., 1338 W. 22nd St., Chicago, Ill.
Janette Mfg. Co., 552 W. Monroe St., Chgo.

Motor Drives, Universal
Cullman Wheel Co., 1350 Altgeld St., Chgo.
Steege Machinery Co., 18 S. Clinton St., Chicago, Ill.

Motors, Electric Ball Bearing
Valley Electric Corp., St. Louis, Mo.

Moulds & Ladles, Hammer and Vise.
Johnson Tool Co., East Providence, R. I.

Multiple Oilers
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo

Nibbling Machines
Libert Machine Co., Green Bay, Wis.
National Machine Tool Co., Racine, Wis.

Nitrided Products
Universal Eng. Corp., Frankenmuth, Mich.

Oil Cups
Essex Brass Corp., Detroit, Mich.
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.

Oil Gauges
Essex Brass Corp., Detroit, Mich.
Gits Bros. Mfg. Co., 1860 S. Kilbourn, Chgo.

Oil and Grease Seals
Gits Bros Mfg. Co., 1860 S. Kilbourn, Chgo.

Operating Valves
Galland-Henning Mfg. Co., Milwaukee, Wis.

Packing, Hydraulic
Chicago Rawhide Mfg. Co., 1280 Elston Av., Chicago, Ill.

Packings, Steam
Greene Tweed & Co., 109 Duane St., New York, N. Y.

Pillow Blocks
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago

Pins and Lacing for Belting
Chicago Rawhide Mfg. Co., 1280 Elston Av., Chicago, Ill.

Pins, Leader And Dowel
Acme Industrial Co., 419 N. Carpenter St., Chicago, Ill.
Boomback Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

Pipe Cutters
Ridge Tool Co., Elyria, Ohio

Pipe Vises
Ridge Tool Co., Elyria, Ohio

Pipe Wrenches
Ridge Tool Co., Elyria, Ohio

Paint Thinning Machines
Oliver Instrument Co., Adrian, Mich.

Press Brakes
Allsteel Press Co., 12015 S. Peoria St., Chicago
Dreis & Krump Mfg. Co., 7440 Lonsdale Blvd., Chicago, Ill.

Press Feeds
Littell Machine Co., F. J., 4125 Ravenswood Ave., Chicago, Ill.
Wittek Mfg. Co., 4809 W. 24th Place, Chgo.

Presses, Arbor
Atlas Press Co., Kalamazoo, Mich.
Fanco Machine Co., Racine, Wis.
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Sheldon Machine Co., 2255 Cottage Grove Ave., Chicago, Ill.
Wilson, E. R., Buffalo, N. Y.

Presses, Bench
Rockford Iron Works, Rockford, Ill.

Presses, Foot
Rockford Iron Works, Rockford, Ill.
Famco Machine Co., Racine, Wis.

Presses, Inclinable
Federal Press Co., Elkhart, Indiana
Rockford Iron Works, Rockford, Ill.

Presses, Power
Allsteel Press Co., 12015 S. Peoria St., Chicago
Dreis & Krump Mfg. Co., 7440 Lonsdale Blvd., Chicago, Ill.
Federal Press Co., Elkhart, Indiana
Rockford Iron Works, Rockford, Ill.

Presses, Punch
Dreis & Krump Mfg. Co., 7440 Lonsdale Blvd., Chicago, Ill.
Henry & Wright Mfg. Co., Hartford, Conn.
Lewthwaite Mchs. Co., T. H., 811 E. 47th., N. Y.

Presses, Sheet Metal
Federal Press Co., Elkhart, Indiana

Presses, Steel
Allsteel Press Co., 12015 S. Peoria St., Chicago

Pullers, Gear and Wheel
Armstrong-Bray & Co., 315 N. Sheldon St., Chicago, Ill.

Pulleys, Die Cast
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago.
Conway Clutch Co., Cincinnati, O.

Pulleys, Steel and Wood
Delta Mfg. Co., Milwaukee, Wis.

Pulleys, Vacuum Cup
Vacuum Cup Metal Pulley Co., Detroit

Pumps
Blackmer Pump Co., Grand Rapids, Mich.
Brown & Sharpe Mfg. Co., Providence, R.I.
Fulflo Specialties Co., Blanchester, O.
Galland-Henning Mfg. Co., Milwaukee, Wis.

Pumps, Coolant
Fulflo Specialties Co., Blanchester, O.
Ruthman Machinery Co., Cincinnati, Ohio
Tomkins-Johnson Co., Jackson, Mich.

Pumps, Lubricant
Ruthman Machinery Co., Cincinnati, Ohio

Punch, Shear and Bender, Hand
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Buffalo Forge Co., Buffalo, N. Y.

Punches and Dies
Whitney Mfg. Co., W. A., Rockford, Ill.

Punches, Hand
Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Buffalo Forge Company, Buffalo, N. Y.
Lewthwaite Mchs. Co., T. H., 811 E. 47th, New York
Whitney Metal Tool Co., Rockford, Ill.

Punches and Dies
Lewthwaite Mchs. Co., T. H., 811 E. 47th., N. Y.

Pusher Tubes
Modern Collet & Machine Co., Ecorse, Mich.

Pyrometers
Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago
Pyrometer Instrument Co., 102-105 Lafayette St., New York City

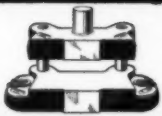
Pyrometers, Optical
Pyrometer Instrument Co., 102-105 Lafayette St., New York City

BETTER-MADE DIE SETS

BAUMBACH

AT LOWER COST

46 DIFFERENT STYLES



OVER 185,000 SIZES

STANDARDIZED DIE SETS

Machined Steel

Semi-Steel

Drop Forged Steel

Send For Our New 288 Page Catalog

E. A. BAUMBACH MFG. CO.

1810 South Kilbourn Ave., CHICAGO, ILLINOIS

100% Adjustable

SHOP SPOTLIGHTS

Place Light Where It Is Needed

Models for Office, Factory and Drafting Room carried in stock.

Send for illustrated catalog

PRICE $3.50 in single lots
$3.25 in lots of six
F. O. B. Factory

Chicago Die Casting Mfg. Co.

2502 W. Monroe St., Chicago, Ill.

Classified Finding Index

Pyrometers, Portable & Stationary
Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago, Ill.
Pyrometer Inst. Co., 102 Lafayette, N.Y.C.

Pyrometers, Surface
Illinois Testing Laboratories, 150 W. Austin Ave., Chicago, Ill.
Pyrometer Instrument Co., 103-105 Lafayette St., New York City

Rivets, Tubular and Split
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Riveters, Automatic Feed
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Riveters, Multiple Spindle
Grant Mfg. & Mchs. Co., Bridgeport, Conn.

Riveters, Pneumatic
Grant Mfg. & Mchs. Co., Bridgeport, Conn.

Riveting Machines
Grant Mfg. & Mchs. Co., Bridgeport, Conn
High Speed Hammer Co., Rochester, N. Y.
Linley Bros Co., Bridgeport, Conn.

Riveting Machines, Tubular and Split
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Rod Cutters
Armstrong-Blum Mfg. Co., 841 N. Francisco Av., Chicago
Lewthwaite Mchs. Co., T.H., 811 E. 47th, N.Y.

Router Bits
Putnam Tool Co., Detroit, Mich.
Weldon Tool Co., Cleveland, Ohio

Saws, Electric Hand
Delta Mfg. Co., Milwaukee, Wis.

Saw Sharpening Machines
Rogers & Co., Samuel C., Buffalo, N. Y.
Wardwell Manufacturing Co., Cleveland, O.

Sawing Machines
Continental Mchs. Specialties, Minneapolis
Grob Brothers, Grafton, Wis.
Wells Mfg. Co., Three Rivers, Mich.

Scraping Mchs., Hand & Pneumatic
Anderson Bros. Mfg. Co., Rockford, Ill.

Screw Drivers, Electric
Haskins Co., R. G., 4654 W. Fulton, Chgo.

Screw Machine Parts
Modern Collet & Machine Co., Ecorse, Mich.

Screw Machine Tools
Banner Mfg. Co., 1873 Clybourn Av., Chgo.

Screw Machines, Automatic
Brown & Sharpe Mfg. Co., Providence, R.I.

Set Screws
Triplex Screw Co., Cleveland, Ohio

Set-Up Appliances
Standard Shop Equipt. Co., Inc., Phila., Pa.

Shafts, Flexible
R. G. Haskins Co., 4654 W. Fulton, Chicago
Pratt & Whitney Co., Hartford, Conn.
Strand Co., N. A., 5001 N. Lincoln St., Chgo.
White Dental Mfg. Co., 10 E. 40th Street New York, N. Y.

Shafts, Hangers & Boxes
Delta Mfg. Co., Milwaukee, Wis.

Shafts, Steel
American Hollow Boring Co., Erie, Pa.

Shapers
Western Mchs. Tool Whs., Holland, Mich.

Shaping Machines
Osborne & Sexton Machy. Co., Columbus, O.
Western Mchs. Tool Whs., Holland, Mich.

Shears, Hand
Armstrong-Blum Mfg. Co. 841 N. Francisco Av., Chicago
Beverly Throatless Shear Co., 2007 W. 110th Place, Chicago, Ill.
Lewthwaite Machine Co., T.H., 811 E. 47th St., New York
The National Machine Tool Co., Racine, Wis.
Whitney Metal Tool Co., Rockford, Ill.

Shears, Power
Buffalo Forge Co., Buffalo, N. Y.
Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
Libert Machine Co., Green Bay, Wis.

Shears, Slitting
Beverly Throatless Shear Co., 2007 W. 110th Place, Chicago, Ill.
Buffalo Forge Co., Buffalo, N. Y.
Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
National Machine Tool Co., Racine, Wis.

Shears, Throatless
Beverly Throatless Shear Co., 2007 W. 110th Place, Chicago, Ill.

Sheet Metal Machinery
Libert Machine Co., Green Bay, Wis.

Shop Lights
Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago,

Shop Stools
Standard Pressed Steel Co., Jenkintown, Penna.

Sine Tables
Robbins Engineering Co., Detroit, Mich.

Special Tools and Machinery
American Tool Works, Inc., Hartford, Conn.

Speed Reducers
Abart Gear & Mchs. Co., 4832 W. 16th St., Cicero, Ill.
Armagio Co., Milwaukee, Wis.
Chicago Gear Wks., 769 W. Jackson, Chgo.
Cullman Wheel Co. 1359 Altgeld St., Chgo.
Janette Mfg. Co., 552 W. Monroe St., Chgo.

Speed Saws, Universal
Wyzenbeek & Staff, Inc., 542 Washington Blvd., Chicago

Spinning Lathes, Metal
Oliver Machinery Co., Grand Rapids, Mich.

Spools & Nuts for Auto. Screw Mchs.
Sutton Tool Co., Detroit, Mich.

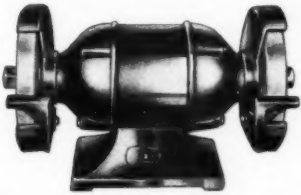
Split Rivets
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Split Rivet Setters, Automatic Feed
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Spot Welding Machines, Speed.
Armagio Co., Milwaukee, Wis
Elster Engineering Co., Inc., Newark, N. J.
Interstate Machinery Co., Chicago, Ill.
Pier Equipt. Mfg. Co., Benton Harbor, Mich.

Sprockets
Cullman Wheel Co., 1359 Altgeld St., Chgo.

Heavy Duty Long Shaft VALLEY Ball Bearing 1/3 H. P. BENCH GRINDER AT $30.00



Full 1/3 H. P. motor 3450 R. P. M. Oversize Ball Bearings mounted in dust tight housings. Repulsion-Induction Single Phase Motor (Not Split Phase). Can be attached to any light socket. Fully guaranteed.

Equipped with two 7" dia. x 3/4" face wheels (Not the usual 1/2" face wheels). Substantial base with cord and plug and switch in base.

VALLEY ELECTRIC manufactures a complete line of Bench, Pedestal type Buffers and Grinders. 1/4 H. P. to 7 1/2 H. P.

VALLEY ELECTRIC CORPORATION ST. LOUIS, MISSOURI

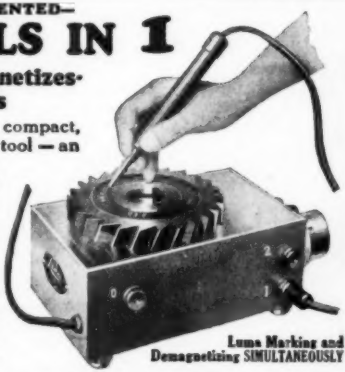
***Mfrs.* of Ball Bearing Motors 1/4 to 40 H. P.**

—PATENTED—

3 TOOLS IN 1

Etches-Demagnetizes-Anneals

THE LUMA is a compact, handy, portable tool—an electric pencil for marking hardened and ground steel—a thorough demagnetizer—a carbon point for light annealing and soldering. Easy to use—plugs in any light socket. Effects surprising savings.



Luma Marking and Demagnetizing SIMULTANEOUSLY

Write for full data—including 5 day FREE TRIAL OFFER

LUMA ELECTRIC EQUIPMENT CO.

DEPT. H.—Main P. O. Box No. 132—TOLEDO, OHIO

Classified Finding Index

Stampings
Hamilton Tool Co., Hamilton, Ohio

Steel Stamps
Colonial Bushings Co., Detroit, Mich.

Straightening Machines
Whitney Metal Tool Co., Rockford, Ill.

Stripping Units
Strippit Corp., Buffalo, N. Y.

Stud Setters
Apex Machine Co., Dayton, O.
Titan Tool Co., Fairview, Penna.

Tables, Drawing
Hamilton Mfg. Co., Two Rivers, Wis.

Tables, Elevating
Midwest Tool & Engineering Co., Dayton, O.

Tap Extractors
Walton Co., Hartford, Conn.

Tap Holders
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago
Scully-Jones & Co., 1901 S. Rockwell St., Chicago, Ill.

Tapping Machines
Etico Tool Co., Brooklyn, N. Y.
Hickert-Shafer Co., Erie, Pa.
Western Mchs. Tool Wks., Holland, Mich.

Tapping Attachments
Errington Mech. Lab., Staten Island, N. Y.
Etico Tool Co., Brooklyn, N. Y.
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago, Ill.
Western Mchs. Tool Wks., Holland, Mich.

Tapping Jigs, Universal
Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

Tapping Machines and Attachments
Burke Machine Tool Co., Conneaut, Ohio
Cleereman Mchs. Tool Co., Green Bay, Wis.
Etico Tool Co., 504 Johnson Av., Brooklyn, N. Y.
Haskins Inc., R. G., 4654 W. Fulton St., Chicago, Ill.
Procunier Safety Chuck Co., 14 So. Clinton St., Chicago, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Thermometers, Resistance Type
Illinois Testing Laboratories, Inc., 150 West Austin Ave., Chicago, Ill.

Threading Machines, Automatic
Grant Mfg. & Mchs. Co., Bridgeport, Conn.
Jones & Lamson Mchs. Co., Springfield, Vt.
Hickert-Shafer Co., Erie, Pa.

Threading Tools
Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago
Ridge Tool Co., Elyria, Ohio.
Hivett Lathe & Grinder Inc., Brighton, Boston

Tool Heads, Universal
Precision Tool Co., Bridgeport, Conn.

Tool Holders
Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago
Michigan Tool Co., Detroit, Mich.
Rigid Toolholder Co., Detroit, Mich.
Western Tool & Mfg. Co., Springfield, O.
Ziegler Tool Co., Detroit, Mich.

Tools
Vinco Tool Co., Detroit, Mich.

Tools, Abrasive
White Dental Mfg. Co., 14 E. 40th Street, New York, N. Y.

Tools, Boring
Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago
Gairing Tool Co., Detroit, Mich.

Tools, Lathe and Planer
Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago

Tools, Machinists'
Armstrong Bros. Tool Co., 808 N. Francisco Av., Chicago
Brown & Sharpe Mfg. Co., Providence, R.I.

Tools, Multi-Diameter
Gairing Tool Co., Detroit, Mich.

Transfer Punches
McMahon Co., Frank, Dayton, Ohio

Tube Fittings
Essex Brass Corp., Detroit, Mich.

Tube Flanging Machines
Grant Mfg. & Mchs. Co., Bridgeport, Conn.

Tubular Rivet Setters, Automatic Fd.
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Tungsten Carbide Tools
Michigan Tool Co., Detroit, Mich.

Turning Tools
Banner Mfg. Co., 1878 Clybourn Av., Chgo.
S & L Tools, Nicetown, Phila., Pa.

Universal Drill Jigs
Heuser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.

Universal Joints
American Tool Works, Inc., Hartford, Conn.
Apex Machine Co., Dayton, O.
Chicago Gear Works, 769 W. Jackson Blvd., Chicago

Used and Rebuilt Machinery
Aaron Machinery Co., 176 Lafayette St., New York City
Abbott Tool & Equipment Co., 30 S. Clinton St., Chicago
Alamo Engine Co., Hillsdale, Mich.
Belyea Co., Inc., 150 W. 18th St., New York, N. Y.
Bennet-Rafkin Corp., 80 Church St., N. Y. N. Y.
Bernstein & Co., Geo. M., 128. Clinton, Chgo.
Blaser Mfg. & Mchy. Co., Springfield, Ill.
Bradley Machinery Co., Detroit, Mich.
Brandt Mchy. Sales, Pittsburgh, Pa.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Cincinnati Mchy. & Supply Co., Cincinnati, O.
Clinton Mchy. Co., 33 S. Clinton St., Chgo.
Dailey, Harry, Cleveland, O.
Davis Machinery Co., Toledo, Ohio.
Dell, Frank M., Indianapolis, Ind.
Delta Equipment Co., Philadelphia, Pa.
Eastern Machinery Co., Cincinnati, O.
Elyria Belting & Mchy. Co., Elyria, O.
Emerman, Louis E. & Co., 1761 Elston Ave., Chicago, Ill.
Erie Electric Motor Repair, Inc., Buffalo, N. Y.
Easley Machinery Co., E. L., 825 Rees St., Chicago, Ill.
Falk Mill Supply Co., Inc., Rochester, N. Y.
Foster Machinery Co., Cleveland, Ohio
Fuchs Mchy. & Supply Co., Omaha, Nebr.
General Blower Co., 401 N. Franklin St., Chgo.
Ganey Machinery Co., Buffalo, N. Y.
Globe Mchy. Co., 602 W. Lake St., Chicago
Goldman, Harvey H., Detroit, Mich.
Goldsher Mchy. Co., 817 Lake St., Chicago
Great States Mfg. Co., Kansas City, Mo.
Hill, Clarke & Co., 645 W. Washington Blvd., Chicago, Ill.
Howarth Mchy. Co., Inc., C. C., Detroit, Mich.
Hyman & Sons, Joseph, Philadelphia, Pa.
Indianapolis Machinery & Supply Company, Indianapolis, Ind.
Industrial Mchy. Co., Indianapolis, Ind.
International Machinery Co., Detroit, Mich.
Interstate Mchy. Co., 109 S. Clinton, Chgo.
Iroquois Machinery Co., Buffalo, N. Y.

For DRILL PRESS

VISE

Often Used on MILLER, SHAPER or PLANER

With and Without Jig Attachments

Made In Three Sizes,—Jaws 6', 9' and 12' Long

Bushings interchangeable. Any Size Up To 1 1/16'

Saves Jig Making

Good as a Plain Vise

Understand And Buy It

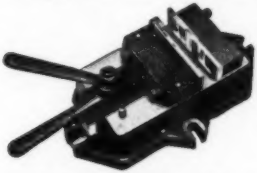
10,000 Sold, for a Reason

Fig. 1. With Jig Attachments.

Send for Circulars

THE GRAHAM MFG. CO., 70 Willard Ave., PROVIDENCE, R. I.

Designed for Modern Production Needs!



HARTFORD MILLING VISE

Quick Opening—Tremendous Binding Power

Modern production milling work demands efficient aids. Thus, when the old type screw vise proved inadequate—a time and money waster—a large New England manufacturer developed the Hartford Milling Vise which affords the utmost in dependability, efficiency and economy. Its lower cam-faced handle gives you quick-opening and return, and the top eccentric lever handle exerts tremendous binding force. With little practice, both levers can be locked or unlocked with one hand.

Write for Complete Information.

We also Build Machinery on a Contract Basis, and Design and Develop Special Automatic Machinery—Gears Cut to Order.

HARTFORD SPECIAL MACHINERY CO.

285 HOMESTEAD AVE., HARTFORD, CONN.

Classified Finding Index

Used and Rebuilt Machinery—Cont.
Johnson & Sons Machinery Co., Wm. C., St. Louis, Mo.
Jones Machine Tool Co., Cincinnati, Ohio
Jones Mchy. Co., Royal Oak, Mich.
Kinney Co., E. A., Cincinnati, Ohio
Lake Mchy. Co., 654 W. Lake St., Chgo.
Land I. J., 145 Grand St., New York, N.Y.
Lang Machinery Co., Pittsburgh, Pa.
Lucas, J. L., Bridgeport, Conn.
McDonald Machinery Co., St. Louis
Machinery Dealers, Inc., New Haven, Conn.
Mass Gulbreath Mchy. Co., Pittsburgh, Pa.
Midwest Equipment Co., 628 W. Lake St., Chicago, Ill.
Miles Machinery Co., Saginaw, W. S., Mich.
Molitor Machinery Co., Charles L., 120 S. Clinton St., Chicago, Ill.
Moorhouse, Frank E., Detroit, Mich.
Morey & Co., 45 Mill St., Astoria, Long Island, N. Y.
Morton Machinery Co., Cleveland, Ohio
Morton-Broadway Machinery Co., Cincinnati, Ohio
O'Brien Machinery Co., Philadelphia
Ohio Mchy. & Supply Co., Cincinnati, Ohio
Ott Machinery Sales Co., Detroit, Mich.
Osborne & Sexton Machy. Co., Columbus, O.
Paonessa Brothers, 708 Washington Blvd., Chicago, Ill.
Prutton Mchy. Co., D. H., Cleveland, Ohio
Reliance Machinery Sales Co., Pittsburgh, Pa.
Rell Supply Co., Cincinnati, O.
Rosenkrans & Weisbecker, 2309 A Singer Bldg., New York City
Scott-Sussbach Mchy. Co., 4607 W. 20th St., Chicago
Segal Machinery Co., 117 S. Clinton St., Chicago, Ill.
Service Co., Cleveland, Ohio
Shunk Mfg. Co., Bucyrus, O.
Simmons Machine Tool Corp., Albany, N. Y.
Standard Machine Co., Baton Rouge, La.
Standard Mchy. Co., Grand Rapids, Mich.
Strong, Carlisle & Hammond Co., Cleveland,
Sun Machinery Co., 28 Van Houten Street, Newark, N. J.
Surplus Stock & Mchy. Co., Inc., 618 W. Lake St., Chicago, Ill.
United Mchry. & Supply Co., St. Louis, Mo.
Victor Machinery Co., 130 S. Clinton Street, Chicago, Ill.
Victor Machinery Exchange 251 Centre St., New York, N. Y.
Vine, R. A., Detroit, Mich.
Walz Mchy. Sales, Chas E., Detroit, Mich.
Waters Machinery Co., Elkhart, Ind.
Wertman Machinery Co., Cleveland, Ohio
West Penn Machinery Co., Pittsburgh, Pa.
White Machy. Co., A. D., 108 N. Jefferson St., Chicago
Wigglesworth Mchy. Co., Cambridge, Mass.
Wolnick Machinery Sales, 9 S. Clinton St., Chicago, Ill.

Vacuum Cleaners, Portable
Breuer Elec. Co., 846 Blackhawk St., Chgo.

Vacuum Cleaners, Industrial
Breuer Elect. Co., 846 Blackhawk St., Chgo.

Valves, Air
R ss Operating Valve Co., Detroit, Mich.

Valves
Galland-Henning Mfg. Co., Milwaukee, Wis.
Ross Operating Valve Co., Detroit, Mich.

Valves, Foot, Lever & Solenoid
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Ross Operating Valve Co., Detroit, Mich.

Valves, Operating
Ross Operating Valve Co., Detroit, Mich.
Tomkins-Johnson Co., Jackson, Mich.

Vises, Combination Drill Table
Modern Machine Tool Co., Jackson, Mich.

Vises, Drilling Machine
Armstrong-Blum Mfg. Co., 841 N. Francisco Av., Chicago
Armstrong Bros. Tool Co., 806 N. Francisco Av., Chicago
Desmond Stephan Mfg. Co., Urbana, O.
Hueser Mfg. Co., 1638 No. Paulina St., Chicago, Ill.
Graham Manufacturing Co., Providence, R.I.
L-W Chuck Co., Toledo, Ohio
Martin Tool & Die Works, J. E., Springfield, O.
Modern Machine Tool Co., Jackson, Mich.
National Machine Tool Co., Racine, Wis.
Odin Universal Corp., 110 S. Dearborn, Chgo.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Yost Mfg. Co., Meadville, Penna.

Vises, Drill
Johnson Tool Co., East Providence, R. I.
Modern Machine Tool Co., Jackson, Mich.
Plunket Mchs. Co., 1823 W. Lake St., Chgo.
Yost Mfg. Co., Meadville, Penna.

Vises, Machinists'
Chicago Tool & Engr. Co., 8890 So. Chicago Ave., Chicago, Ill.
Desmond Stephan Mfg. Co., Urbana, Ohio
L-W Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Western Tool & Mfg. Co., Springfield, O.

Vises, Milling Machine
Graham Manufacturing Co., Providence, R.I.
Hartford Special Mchy. Co., Hartford, Conn.
L-W Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Plunket Mchs. Co., 1823 W. Lake St., Chgo.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.

Vises, Precision
Odin Universal Corp., 110 S. Dearborn, Chgo.

Vises, Shaper
Graham Manufacturing Co., Providence, R.I.
L W Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Plunket Mchs. Co., 1823 W. Lake St., Chgo.

Vises, Special
Modern Machine Tool Co., Jackson, Mich.

Welders, Arc
Hobart Brothers, Troy, Ohio
Lincoln Electric Co., Cleveland, Ohio

Welders, Portable
Commonwealth Mfg. Corp., Cincinnati, O.
Hobart Brothers, Troy, Ohio
Lincoln Electric Co., Cleveland Ohio
Universal Power Corp., Cleveland, Ohio

Welders' Glass
Faulk, F. R., 405 Penn Av., Pittsburgh, Pa.

Welding Machines, Electric Spot
Armgie Co., Milwaukee, Wis.
Eisler Engineering Co., Inc., Newark, N. J.
Hobart Brothers, Troy, Ohio
Interstate Machinery Co., Chicago, Ill.
Pier Equipment Co., Benton Harbor, Mich.

Welding Machines, Resistance
Armgie Co., Milwaukee, Wis.
Eisler Engineering Co., Inc., Newark, N. J.
Lincoln Electric Co., Cleveland Ohio
Pier Equip. Mfg. Co., Benton Harbor, Mich.

Wheel Pullers
Armstrong-Bray & Co., 841 N. Sheldon St., Chicago, Ill.

Wheels, Grinding
Chicago Wheel & Mfg. Co., M.C. Tool Div., 1101 W. Monroe St., Chicago, Ill.

Woodworking Machinery
Tanewitz Works, Grand Rapids, Mich.

Worm Drives
Michigan Tool Co., Detroit, Mich.

Worm Gear Motor Units
Star Mchs. & Eng. Co., Bloomfield, N. J.

Wrenches, Reversible
Greene Tweed & Co., 109 Duane St., New York, N. Y.

DRILL CHUCKS

With Hardened Steel Jaws

Capacity 0 to ½" fitted with No.1 or No. 2 Morse taper shank . $1.25 ea.

No. 1 or No. 2 Morse taper shanks with ½" x 24 thread . . . . 73c ea.

Chucks without shanks . . . 52c ea.

WHY PAY MORE?

MADE BY

NIELSEN, INC.

LAWTON, MICH.

HASSALL

NAILS, RIVETS & SCREWS

MADE TO ORDER IN ANY METAL—SEND FOR ILLUSTRATED FOLDER

JOHN HASSALL, INC. EST. 1850 400 OAKLAND ST., BROOKLYN, N. Y.

FREE BUYERS' SERVICE

To All of Our Readers

If you will list below the new or used metal-working machines or machine shop equipment for which you are in the market, and mail it to us, we shall be glad to broadcast it to all of our advertisers. Replies will come from them, not from us.

But if you prefer that we put you in direct touch with the manufacturers of any particular machine tool or other metal-working equipment, let us know and we will endeavor to locate them for you.

Name .....

Address .....

We are in the market for .....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Mail to Hitchcock Publishing Co., 508 So. Dearborn St., Chicago, Ill.

Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus $3.00 for name and address. Minimum charge, $6.00. No display permitted.

Write directly to those offering the machines for sale, for prices and full descriptions. If what you seek is not advertised, use the enclosed printed form to make known your wants in either new or used machinery and the publisher will gladly pass them along to the advertisers.

FOR SALE BY

Foster Machinery Co, 3982 Bluestone Rd. Cleveland O.

Air compressor, 6"x8" Bury, tank and gauges.
Bolt cutter, 1½" Acme Class "A" with USS & SAE dies.
Draw bench, 10,000 full 12' draw.
Drill, multi, No. 2 Bausch, cap. 24 drills, head 17"x32".
Hoist, ½ ton electric, 30' lift.
Riveter, 50 ton Hanna.
Rotary planer, 50" Cleveland, m. d.

FOR SALE BY

Elyria Belting & Machinery Co., • • • • Elyria, Ohio

Crane, 10-ton Cleveland 44' span, with 3-ton auxiliary hoist, cab drive, 22 h. p., a. c. motors.
Drill press, Natco No. 11, arranged for 12 spindles.
Elect. oven, Westinghouse 6'x7'x6'8" 30 k. w. type M, size 107.
Grinder, centerless, Heim No. 162.
Header, or upsetter, National, 3½", steel frame.

FOR SALE BY

Aaron Machinery Co., 176 Lafayette Street, New York, N. Y.

Automatic, No. 53 Nat. Acme 4 spdl.
Bolt threaders, 3 Acme.
Drill press, 28", tap. attach ....$225.
Engravers, Gorton, 3X, 1A, 1D.
Gear hobber, 24" Rhenania.....$475.
Grinder, pl. Landis 20"x72".....$575.
Keyseater, 3" capacity.....$475.
Miller, Becker vert., m d.....$475.
Miller, Rockford No. 2, vert. att.
Lathe, 26x45x14' McCabe.
Planer, 24x24x6' .....$250.
Shaper, slotter, Rhodes, rotary tbl.

FOR SALE BY

Goldsher Machinery Co., • 817 W. Lake St., • Chicago, Ill.

Brake 10' 14 gauge Dreis & Krump.
Drill presses, new 16" Buffalo Forge with ½" chucks, 1/3 h. p. motors.
Press, No. 4 Ryerson comb. shearing, coping and punch press.
Press, No. 162 Toledo toggle.
Punch & shear, No. 52, Beloit, with 3 h. p. motor.

FOR SALE BY

H. F. Wolnick Machinery Co., • • 9 So. Clinton St., Chicago, Ill.

Drill, radial, 30" Western.
Drill, mult. spl., 26 spls. No. 1 taper.
Gr. hob, Schuchardt & S., & Fellows.
Grinders, Norton, Landis & Modern, (25).
Lathe, turret, Jones & Lamson 2½" and 3".
Lathe, grd. hd., s.p.d., 22x20' centers t. a. and chuck.
Milling machines, pl, B.&S., Cinci. and Oesterlein No. 2 to 4.
Screw machines, auto., Gridley and National Acme.
Screw machines, hand, W.&S. and Bardons & Oliver No. 1 to No. 6.
Shapers, 16" to 24".

FOR SALE BY

Marr-Galbreath Machinery Co., 55 Water St., Pittsburgh, Pa.

Air compressor, 4½"x4½" Gardner, water-cooled.
Air compr., 7x6" Ing.-Rand, ER-1.
Air comp., 8x8" Chicago, NSB.
Air comp., 10x8" Ing-Rand, ER-1.
Air compressor outfits for garages, ¼, 1 & 1½ h. p. 1/60/110-220.
Auto., lathe, 14"x19" Fay, for m. d.
Bolt threader, 2½" Landis dbl., m. d.
Boring mill, 42" Bullard, 1 swivel and 1 turret head, m. d.
Boring mill, N-B-P., fir., 2 columns, 6" bars, with separate milling hd., motors 220-v. d. c.
Boring mill, 30" Colburn, turret hd.
Boring mill, 30" Bullard V T L, threading attachment.
Brake, 6'x22 ga. dbl. thrust hand.
Brake lining, punch and riveting machine, m. d.
Compr., cent. 75 h.p. G.E., 3/60/220.
Crusher, No. 1 Williams Little G., b.d.
Die sinker, No. 3 P. & W., r. t.
Drill, 24" Aurora, t. a., m. d.
Drill, 28" Superior, b. g., power fd.
Drill, No. 11-B, Natco, 16-sp., m. d.
Drill, rad., 2½' Fosdick & Holloway.
Drill, radial, 3' Dreses, tapping att.
Drill, radial, 3½' Canedy-Otto.
Forging mch., 1½" Acme; 2½" Ajax.
Gear cut., No. 3 Newark 36" for m.d.
Grinder, disc, No. 2 Gardner, 15 h.p. motor 3/60/220.
Grinder, disc, No. 6 Besley, 2—10 h. p. motors 3/60/220.
Grinder, 7½ h. p., U.S. dbl. end, 3/60.
Grinder, pl. 11 B. & S. 4x30" (cheap).
Grinders, univ. tool & cutter, 1 & 1½ Cincinnati.
Grinders, univ. Bath 10"x36", mag. chuck 9x31".
Hack saw, 6x6" and 9x9" Racine.
Hammer, power, 50 lb. Boss, b. d.
Hammer, power, 50 lb. Little Giant, belt drive. m. d. (2).
Hammer, 100 lb. Mayer, power.
Hammer, 200 lb. Beaudry, power.
Hammer, 400 lb. Bliss board drop, b.d.
Hammer, 800 lb. Erie SF steam or air.
Hammer, 1000 lb. Chamber'g st. drop.
Hammer, stm. drop, 1500 lb. (nr. new).
Hammer, Syntron Elec., 1/60/110/.
Header, cold, ½" W.-F. D. S.-OD.
Hoist, chain, 4-ton triplex, Y. & T.
Hoist & crane, 3-ton Canton Portbl.
Jointer, bench, 4" Wallace, m. d.
Keyseat miller, No. 4 Burr, 4½"
Keyseater, No. 2 Catlin, cap. 2"x15".
Keyseater, No. 3 Mitts & M., belt.
Lathes, 9"x3'; 10"x4', plain change.
Lathe, 9" Porter-Cable prod., pump.
Lathe, 14"x19" Fay automatic.
Lathe, 16"x6' L. & S., q. c. g., chk.
Lathes, 16"x7' National, q.cg., (3).
Lathe, 20"x10' Johnson q. c. g., t. s., chuck.
Lathe, 22"x12' Rahn-Larmon, q.c.g.
Lathe, 24"x8' L. & S., q.c.g., d.b.g., chuck.
Lathe, 26"x14' Draper, plain change gear, chuck and c./s.
Lathes, 42"x30" Bridge'd g. h., m.d.
Lathe, turret, No. 4 W. & S., bar feed, m. d., g. f. h. (2).
Miller, bench, No. 1 P. & W., hand. (like new).
Miller, No. 2 Brown & S. pl. cone.
Miller, No. 1½ American, pl. cone.
Miller, pl., No. 15 Garvin, 42x10½x21".
Miller, No. 4 Ohio, table 101".
Pipe cutter, 3" Murchey, motor 3/60/440 v.
Pipe machine, 2" Robbins, bench, motor 1/60.
Pipe machine, 12" Cox., b. d.
Pipe machine, 12" E. C. & B., a. p. d.
Pipe machine, 18" Wieland, m. d.
Planer, 16"x16"x4' P. & W., 1-head.
Planer, 16"x16"x4' Pratt & W., b. d.
Planer, Gray, 56x48x10', 4 heads.
Polishing stand, 3 H P. US., 3/60/220.
Press, No. 78½ Bliss T. R., 10" str.
Press, Farrell D. C. bed 34x36" wgt. 13,700 lbs.
Press, P-3 Ferracute m. d.
Press or shear, United ob., 3½" shaft, m. d.
Press, arbor, 3½ Greenerd, hand.
Press, 30-ton Lourie hydraulic.
Pump, tripl., 1½"x4" Worthington, b.d.
Punch, triple combination Pels 16., m. d.
Punch & shear, s.e., ½"x¼", 18" thrt.
Punch and shear, No. 3 L. & A., ⅜"x¼", 14" throat.
Punch and shear, No. 12 Badger combined, b. d.
Punch, & sh. hand, No. 3B. Beloit 5/16"x¼".
Punch & shear, 25x24 U. Buffalo,
Punch, s. e. rapid, No. 000 H. & J., 16" throat.
Riveter, 4-A, high spd., belt, or m.d.
Riveters, Shuster, ½" & 3/16", belted
Riveter, No. 120 Grant, cap. ⅝", m.d.
Rolls, 48"x3" Niagara, Initial, power.
Saw, No. 10 Racine 9x9", belted.
Saw, cold, No. 7 Espen-L., 18" belt.
Saw, cold, No. 1 Newton, 4½" belt.
Saw, hack, No. 4 Marvel, m. d.
Saw, No. 1 Marvel hack, 4"x4", b.d.
Saw, 6"x6" Racine hack, gear box, belt drive.
Shaper, 24" American b.g. crk., b.d.
Shaper, 24" G. & E. hi-duty, motor 220-volt, d. c.
Shaper, 15" Springfield, sbg; belt.
Shaper, 15" Blount, friction type.

USED AND REBUILT MACHINERY

Marr-Galbreath Machinery Co.—Continued

Shaper, 20" G. & E. b. g., m. d.
Shaper, 21" Smith & Mills.
Shaper, 24" Barker b. g. V-ram, b. d.
Shaper, 28" Hendey friction vise.
Shear, angle, 6x6½" Kling., m. d.
Shear, throatless 18-M Marshalltown, motor drive.
Shear, bar 3" United, 24" blade, m.d.
Steam turbines, 100 h. p. 900 rev. (2).
Straightener, ⅜"x20' Shuster, cut-off.
Turret lathe, 18"x3½" Libby, m. d.
Valve refacer, Kwik-Way, cabinet base, m. d.
Vises, machinists, 2½"4½"&5". (11).
Welder, Arc 300 amp. 3/60/220.
Welders, arc, 35 amp., transformer.
Welding & cutting generator, Carbic
Wheel press, 60 ton 34"x8½", b. d.

Partial List. Get Our New Complete Stock List.

FOR SALE BY

Chas. E. Wain Machinery Sales, 7800 Mack Ave., Detroit, Mich.

We offer 10,000 feed fingers and collets, sizes to 4½", for most all machines, mostly new, at 25% of regular price.
Send all outside dimensions.

FOR SALE BY

W. E. Brandt Mach'y. Sales, 513 Empire Bldg., Pittsburgh, Pa.

Brake, 10'x3/16 D&K all steel, m.d.
Brake, 10'x⅛" D. & K. leaf.
Brake, 8'x 16 ga. D.&K. leaf-hand.
Gear generator, 11" and 18" Gleason.
Grinder, No. 2 Woods tool & cutter.
Keyseater, No. 2 Baker, 2" keyway.
Roll, bending, 9'x⅛" H. & J., D. E.
Roll, bending 10'x⅛" Cleveland, d. e.
Shear, 12'x14 ga. Niagara.
Welder, 200 amp. Lincoln, m. d.

FOR SALE BY

Wigglesworth Machinery Company

199 Bent Street, Cambridge, Mass.

Boring mill, 3½" bar Universal.
Grinder, 14" Pratt & W. model B.
Jig borer, No. 2 Pratt & Whitney.
Miller, No. 3B heavy B. & S. plain.
Miller, No. 4B Kearney & Trecker vert.
Miller, No. 4 B B&Spl. rapid traverse.
Saw, Avey Milband, 6"x8" m. d.

Send for Complete Stock List.

FOR SALE BY

The O'Brien Machinery Co., 113 N. Third St., Philadelphia, Pa.

Band saw, 42" American, V belt, m.d.
Boring mill, 24" Bullard New Era.
Boring mill, 100" N.B.P. mtr. dr. 103" swing, 52" under rail, rapid traverse.
Boring mill, 24" Bullard, rap. prod., threading attachment.
Boring mill, 36" Bridgeport.
Crane, 36' Gantry, 20 ton, hand oper.
Drill, 6' Mueller radial, mtr. dr.
Drill, 32" Cin. Bick. upright, s.p. drive.
Drill, D2 Colburn, 3" cap.
Grinder, No. 103 Rivett, internal hole cap. 1/64" to 2".
Grinder, 12"x24" Modern cylindrical.
Hammer, 800 lb. Erie, steam forging.
Hammer, 1100 lb. NBP. steam forg.
Hammer, 2000 lb. Chambersburg double frame steam.
Lathe, 19"x8' Sidney, heavy duty, belt dr. quick change,
Lathe, 30x24 New Haven, belt.
Miller, No. 3 LeBlond plain, belt drive, table 12"x60", quick chge.
Miller, No. 2 Kempsmith, plain, table 10"x45", belt drive.
Miller, No. 5 Cincinnati plain, table 76"x19", s. p. drive.
Pipe machines, 2, 4, 6, 8 and 12" belt and motor drive.
Punch, No. 3 Royersford, double end, 12" throat, cap. 1½"x1½".
Shapers, 14, 16, 20 & 24" various makes
Turret, No. 1B Foster, S. P. drive. 3" capacity.

FOR SALE BY

Reliance Machinery Sales Company

1405 Brighton Place, N. S. - - - - **Pittsburgh, Pa.**

Air compressor, 8"x8" Bury, 129'.
Brake, press, 72" Rob. toggle m. d.
Brake and folder, 72" Niagara, 22 gauge, motor 3-60-220.
Bulldozer, No. 9 W.-W., 70,000 lbs.
Drill, 4 spindle Colburn, Mfg. type, cap. 2", like new.
Hammer, 80 lb. Brad. cushion helve.
Hammer, 300 lb. Beaudry upright.
Lathe, 27"x18' Pittsburgh, taper.
Lathes, spinning, 30" Bliss & Tol., roller bearing.
Lathe, 18"x12' L. & S., q.c.g., cone.
Nibbler, No. 1 Gray 34" tht., 3/16" capacity, m. d.
Press, No. 92-C Toledo, dbl. crank, geared, 4" shaft 3" str.
Press, Robinson dbl. cr., 80" wide, 4" shaft, grd. 3" stroke.
Saw, hack, 12"x12" Racine, m. d.
Shapers, 16", 20", 24", 25", 32" crk.
Shear, double angle, 6x6x3/4" Clev., mounted on turnable, m. d.
Welders, 300 and 400 amp. Lincoln. motor end 3-60-220-v.

FOR SALE BY

Belyea Company, Inc., - 150 W. 18th St., New York, N. Y.

D. C. MOTORS
Adj. Speed—230 Volt

H. P.	MAKE	TYPE	SPEED
1— 250	West.	3bear., SA	250/ 750
1— 125	West.	SK-210	225 900
2— 120	G. E.	DMC	300/ 750
3— 80	Diehl	K11-40	550/1100
1— 75	G. E.	CD	575/ 870
1— 60	West.	SK	107/ 160
2— 60	El. Dy.	2SS	450/1200
5— 60	El. Dy.	2SS	525/1050
2— 50	West	SK-190	225/ 600
1— 50	West.	SK-160	600/1200
12—40/50	Cr. Wh.	EM	175/ 700
2— 40	West	SK	120/ 240
1— 40	West.		300/ 900
2— 35	West.	SK	500/1500
1— 30	El.Dy BB.	10-S	800/1600
12— 20	G. E.	LC	650/1950
1— 20	G. E.	RF-12	500/1500
2— 7½	G. E.	RF-10A	450/1800
12— 7½	West.	SK-80L	400/1600
12— 7½	West.	SK-70L	500/1500
1— 7½	G. E.	RLC	600/1800
1— 5½	West	SK	600/1800
14— 5	West.	SK-70L	400/1600
10— 3½	West	SK-40	450/1800

MOTOR GEN. SETS.

3—1250/1500 k. w. Westinghouse, 3 unit M. G. sets consisting of:-
2—625/750 k. w. DC Gen. 125 v., 600 RPM coupled on each end of:
1—1930 k. v. a. synch. motor, 2200 v. 600 rpm. 3 ph., 60 cy.
1—22½ k. w. type SK, 125 v., 600 rpm. exciter.
1—1000 k. w., G. E. type M. P. C., D. C. Gen. 250 v., conn. to 1400 h. p. type ATI, synch. motor, 6600/2300 v., 514 r.p.m. 3 ph., 60cy.

250 KW G E. 3 unit Synch. Motor Gen. Set consisting of 2 125 KW Interpole, DC, 125 V. generators coupled on each end of 1—390 HP Synch. Motor, 6600 V., 3 Ph., 25 Cy., 750 RPM.
2—250 KW G E. DC Gen., 250 v. conn to Synch. Motor, Type ATI, 2300 V., 720 RPM. 3 ph., 60 cy.

A. C. MOTORS—60 CYCLE
Synch. Type

H.P.	TYPE	VOLTS	SPEED
2850	G.E., ATI	2300/4150	450
1500	G.E., ATI	440/ 220	180
850	G.E., ATI	2300	720
500	G. E.	440	1200
450	West.	440/220	257
225	E.Mchy 3Brg	2300/4150	450
220	G.E., ATI	2300	900

SLIP RING TYPE

450	West. CW	2200	875/700
400	West. CW1416	2200	290
400	G.E. MT424	4150/2300	390
400	West. CW	2300	514
400	G. E. IM	2200	885
300	Al. Ch ANY	2200	585
250	G. E. MT-424Y	4000/2300	257
250	F. Morse BV	2200	1200
250	West. CW	440/220	585
225	G. E.	440/220	1800
200	West CW	440/220	575
200	West CW	2200/550	870

SQUIRREL CAGE TYPE

1—250	West. CS	2300/440	580
1—200	G. E., IK	550	600
1—200	West. CS876A	220/440	1160
1—100	G.E. IK15	440/220	720
1—100	West. Vert. CS	440/220	1200

USED AND REBUILT MACHINERY

FOR SALE BY

West Penn Machinery Company

1210 House Building, Pittsburgh, Pa.

Air compressors, 30 to 2500 cu. ft.
Beader, Yoder, 12 ga. m. d.
Blower, No. 4 Roots, cap. 2110 c.f.m.
Bolt cutter, Acme 2", belt drive.
Bor.mills, 24" Bullard New Era.
Boring mill, 14", b. d.
Boring mill, 60" Colburn, 2 hds., spd.
Boring mill, 62" Betts, 2 heads, b. d.
Bor. mill, hor. 5" bar Barrett. m. d.
Brakes, 3' x3/16" Chicago, m. d.
Bulldozers, Nos. 2, 4, 6, 9, 28, & 30.
Crane, 7½ ton Morgan, 65', 220v. DC.
Cranes, Electric Traveling.
Crane, crawler, gas., No. 2 No'wes.
Draw bench 20000 lb. W-F.
Drill, radial, 4' Prentice, t. a., b. d.
Drill, rad. 5' Cincinnati-Bick., m. d.
Drill, radial, 5' American, s. p. d.
Drill, rad. 6' Reed-Prentice, s. p. d.
Drill, mult. 24 sp. No. 30 Natco.
Drills, upright 10" to 36".
Drill, press, 6 spindle Allen.
Engine, gas, 20 h. p. Bessemer.
Flanger, McCabe, 9" capacity, dies.
Gear cutters, 11", 18" & 24" Gleason.
Gear tester, bevel 18" Gleason.
Grinder, roll, Farrel 28" x64".
Grinder, d. e. 2 h. p. 220/440/3/60.
Grinder, disc, No. 8—20" Besly, b. d.
Grinder, 12x24" Landis univ.
Grinder, sheet, Mattison.
Grinder, T&C, No. 2 Oakley, b. d.
Grinder, D.E., 3 HP. 220/3/60.
Grinder, surface 8" Heald.
Grinder, sur. 14" Pratt & W., m. d.
Grinder, surf. Diamond, table 48x16".
Grinder, int. No. 60 Heald, b. d.
Hammer, 100 lb. Little Giant.
Hammer, Blacker, power, 35-lbs.
Hammer, Brad. 500 lb. upright.
Hammer, power, 90-lb. Justice, b. d.
Hammer, pwr., 100 lb. Brad. cush.
Hammers, Nos. 2-B, 3-B, 4B, Nazel.
Hammers, steam, 600 lb. to 6000 lbs.
Hammer, stm. dr., 1500 to 10000 lb.
Hogging machine No. 3 C. M&M.
Keyseater, No. 3A M. & M., b. d.
Lathe, 11" x5' Meyers, p. c. g., b. d.
Lathe, 14" x6' Prentice grd. hd.
Lathe, S-B 18x8', b. d.
Lathe, 18" x8', L. & S., b. d.
Lathe, 22" x12' R-L q. c. g., d. b. g.
Lathe, 24" x12' L. & S. b. d.
Lathe, 24" x15' Prentice, grd. hd.
Lathe, 42" x16' S. B., q. c. g., b. d.
Lathe, 42" x30' Bdgfd. grd. hd.
Lathe, 60" x16' Putnam, b. d.
Lathe, spinning 32" b. d.
Lathe, roll, 18" x14'.
Lathe, turret, 24" Steinle, 6¾" hole.
Lathes, turret, No. 4 W & S. b. d.
Miller, vert. No. 6 Becker, m. d.
Miller, B.&S. Universal No. 4 b. d.
Miller, No. 1 Kempsmith.
Miller, No. 2 Cincinnati plain, b. d.
Motors, a. c. & d. c.
Nut tapper 8 sp. 1" National.
Pickler, 4 arm Mesta, 10' radius.
Pipe machine 2" Landis b. d.
Pipe mches., 6" Williams.
Planer, 42x42"x12' Cinc., 3 hds., b.d.
Press, No. 20C Bliss, OBI.
Press, No. 5 L. & J. OBI.
Press, No. 3 Bliss, Stiles type.
Press, cam, No. 69N Bliss, dbl act. inc.
Press, horn., No. 43 Toledo 1½" str.
Press, No. 93-B Toledo, b. d.
Press, hyd. 100-ton Southwark.
Press, No. 55 Toledo, bed 20x19.
Press, No. 57 Toledo, 32" x32", str. 6".
Presses, hyd. 200-ton Oilgear.
Press, dbl. crank No. 5 Bliss, 2" str.
Press, o. b. i., Nos. 18, 19, 20 Bliss.
Press, screw, No. 87 Niagara.
Press, wheel, hyd., 300 ton Niles.
Press, 6 spindle. W-F.
Punch, beam, No. 5, H. & J.
Punch, Rock River, ½"-¾".
Punch, E F Cleveland, 36" thrt., 1½"-1"
Pumps, Cent. 6", 4", 1", m. d.
Riveters, air, hammer, spinning.
Rolling mill, cold 9" x18".
Saw, band, metal, 10x10 Napier.
Saws, friction, Nos. 2, 3 & 4 Ryerson
Saw, cold, 48" Newton.
Saw, hack, Peerless, 4½x4½".
Saw, hack, Racine 6x6.
Saw, hack, Racine, 12x12.
Scale, sheet bundling, 2500 lbs.
Shaper, 32" Cincinnati, b. d.
Shapers, 16", 20", 24 & 36" G. & E.
Shear, circle No. 3 Bliss, 40" x20 ga.
Shear, circle, Niagara, 4" cutters.
Shears, alligator, ½", 2", 3", 4" &6".
Shear, angle 6x6x¾", Cleveland.
Shear, bar 1½", New Doty.
Shear, bar No. 2 H. & J. 2".
Shear, beam. 24 Cleveland.
Shear, bevel, Lennox ⅜", b. d.
Shear, comb. 24-U-Buffalo.
Shear, sq, 11' x10 ga. Niagara, m. d.
Shear, plate, 80" x⅜" Pels.
Shear, plate 66" x1" H. & J.
Shear, rotary 24" thrt. cap. ½", m.d.
Shear, Streine 10'-16 ga.
Shear, Buffalo all steel 3" sq., m. d.
Slotters, 6" Newton, 8" & 21" Betts.
Slotter, 24" Newton, motor drive.
Straightener, 42" Aetna std. 17 roll.
Straightener, shape, Sutton No. 2.
Straitener, 54" United 17-rolls 3¾" dia.
Straightener, 1½", 4" rd. Abramson.
Tumbling barrel, 34" x45", b. d.
Upsetters, 1" to 6".
Welder, 40 kw. Thom. 2 pcs. ⅛".
Welder, butt 1½" Winfield.

FOR SALE BY

Brownell Machinery Co., 150 Pine Street, Providence, R. I.

Automatic screw machines, Gridley 4 spdl. model F. ⅝", 1⅛", 2⅜".
Drill, radial, Fosdick 2½' cone.
Drill, radial, Prentice 4' spd.
Grinder, 12" Heald Rotary Surface.
Lathe, 32"x28' New Haven.
Miller, No. 3 Hendey universal.
Miller, No. 2-M P. & J. automatic.
Planer, 24x24x6 Whitcomb second belt drive.

FOR SALE BY

Harry Dalitz, • • • • 701 E. 96th St., Cleveland, Ohio

Air compressors, Ingersoll-Rand high pressure.....$60 to $90.
Broaches, round or keyway, LaPointe.....$4 to 20.
End mills, high speed, ½" to 1½" Morse and B. & S. taper.....$1 to $4.
Gear cutting milling machines, automatic. Cut gears from ⅛" to 3". Ea. $140.
Milling machines, hand and power feed.....$40 to $150.
Milling cutters, high speed, inserted tooth, to 12" in diameter. 65¢ lb.
Many other bargains in machinery, tools, motors and grinding wheels.

FOR SALE BY

Ganey Machinery Co., • 123 Arthur St., • Buffalo, N. Y.

A DIVERSIFIED OFFERING OF GOOD MACHINE TOOLS!
Bending rolls, 20'x⅜" Wickes Bros.
Lathes, engine, 40"x18' Pond geared head (2).
Lathe, turret, No. 4 Warner & Swasey universal.
Miller, 30"x30"x72 Ingersoll.
Your inquiries solicited.

FOR SALE BY

Davis Machinery Co., St. Clair & Washington Sts., Toledo, Ohio

Bolt cutter, 1" Landis dbl. hd. lead screws.
Gear hobbers, No. 12 B.-C. double overarm, m. d.
Grinder, Capitol internal.
Keyseater, No. 2 Mitts & Merrill.
Lathe, 3"x36" Jones & L. flat turret.
Lathe, 16"x8' Walcott, q. c. g.
Mill, No. 3 Kempsmith plain.
Mill, No. 2A Garvin univ. compl.
Mill, model C Becker vertical.
Mill, No. 5B Brown & S. pl., s. p. d.
Nibbler, 6" Campbell metal.
Planer, 36"x36"x8' American, 2 hds.
Press, No. 53 Toledo, s. s.
Radial drill, 3' Bickford, motor dr.
Radial drill, 4' Hammond hinged arm
Screw machine, No. 3 Foster hand.
Screw machine, 1⅛" Gridley model F.
Shaper, 20" Ohio crank, b. g.
Shear, 205 P.S. & W. circle & flanging.
Threaders, ⅝" Geometric.

FOR SALE BY

Fuchs Machinery & Supply Co., 1102 Farnam St., Omaha, Nebr.

Die filer, Oliver No. S P I.
Drill, 3' C. O. radial.
Drill, 1 spindle Sipp.
Drill, 25 spindle Snyder, vertical.
Drill, 40 spindle, Barnes.
Grinder, 6x32 Norton.
Grinder, 10x36 Norton.
Grinder, No. 1 Landis universal.
Grinder, No. 23 Landis crank pin.
Grinder, Micro internal m. d.
Grinder, No. 10 Besley disc.
Hammer, 100 lb. Little Giant.
Hacksaw, 6x6 H. S. Peerless.
Lathe, No. 3 Foster turret.
Lathe, ¾ P. & W.
Lathe, 16x8 Monarch q. c.
Lathe, 22x10 Pond.
Press, No. 2 Perkins o. b. i.
Press, No. 3 Robinson o. b. i.
Press, No. 5 L. & J. o. b. i.
Press, D. A. C. 34 Ferracute.
Upsetter, swager, 1½" Acme.
Welders, arc, 150 — 200—300 amp. Lincoln, G. E., USL.
Welder, Taylor-Winfield, 13 k. v. a.

USED AND REBUILT MACHINERY

FOR SALE BY

Great States Mfg. Co., 1601 E. 39th St., Kansas City, Mo.

Brake, 5' pan, with fingers and all attachments.
Die filing machine, Oliver.

Shaper, 16" Smith & Mills, complete with vise.

FOR SALE BY

Scott-Bansbach Machinery Co., 4607 West 20th St., Chicago, Ill.

Automatic screw machine, cone, ¾", 4 spindle, belt drive..... $1,000.
Automatic screw machines, B. & S., Nos. 00, 0, 2..... $350 to 1000.
Automatic screw machine, B. & S. No. 19 high speed, cap. ⅝"x1½". b. d. 400.
Automatic screw machine, B. & S. No. 19 high speed, cap. ⅝"x1½",m.d. 500.
Automatic screw machine, Davenport, ½", 5 spindle, b. d..... 750.
Automatic screw machine, Gridley, 4 spindle model G, 9/16" cap..... 600.
Automatic screw machine, Gridley 4 spdl. Model F .⅝" and 2½..... $150 & 750.
Automatic screw machine, Gridley, 4 spdl., 1½", Model G. and F..... 600.
Automatic screw mche., Cleveland, Model A&B, ⅝" to 3½" b.d. $300 to $1000.
Miller, No. 0, Bristol, hand, 14"x42"x14"..... 135.
Miller, No. 1A Milwaukee, geared head, capacity 22"x8"x19"..... 800.
Miller, No. 1½B Milwaukee, geared head, capacity 28"x10"x19"..... 1100.
Miller, No. 2, Cincinnati, plain, belt drive, 28"x10"x19", swivel vise..... 750.
Miller, No. 28 Ohio, plain, belt drive, 28x10x13, vise..... 700.
Miller, No. 5, B. & S. plain, cone drive, capacity 48x12x18..... 750.
Miller, No. 33 Kempsmith geared head Production type, 36"x10"x11" 750.
Motor, 20 h. p. G. E., 220 v., 60 cy., 3 ph., 1145 r. p. m., complete..... 175.
Planer, 17"x18"x3' 6", no name, 1 head..... 150.
Planer, 24x24x6 Ohio heavy duty, 1 head..... 350.
Planer, 48"x48"x8', Powell, heavy duty, 1 head..... 500.
Planer, 72x72x12 Gray, 4 heads..... 1,500.
Press, No. 0 Hercules, bench type, ⅜" str.. 115 lbs. Fly Wheel 25 lbs... 50.
Press, No. 1 Yankee, solid back, 1½" stroke..... 65.
Press No. 15 Robinson, horn type with table and motor, AC 220 volt 325.
Press, No. 21 Bliss, o. b. i. 2" stroke, 37 ton capacity, 3800 pounds..... 525.
Press, No. 51 Toledo arch, 2½" stroke, 56 ton, 5300 lbs..... 350.
Punch, shear and bender, No. 23 Armstrong-Blum..... 100.
Punch, Kneeland, 10" throat, shears 5"x1" flats..... 100.
Riveter, No. 1½B, High Speed Hammer, capacity ½", motor shelf..... 100.
Riveter, No. 3A, High Speed Hammer, cap. ⅝", motor shelf..... 150.
Riveter, No. 4A, High Speed Hammer, ⅞" capacity, no ctrsft..... 200.
Riveter No. 5 A, High Speed Hammer, cap. ⅞", motor shelf..... 275.
Riveter, Grant No. 82, 101A, 80 and 120, capacity ⅝" to ⅞", belt dr. 50 to 125.
Saw, No. 2 Klem, band, for metal cutting, belt drive..... 300.
Scleroscope, Shore complete with stand and blocks, model C..... 125.
Screw machine, Acme, plain head, ⅝"x4" belt drive..... 125.
Screw machine, B & S. No. 2 plain head, ¾"x5" belt drive..... 300 & 350.
Screw machine, P & W plain head, 1"x15" belt drive..... 200.
Screw machine, S & K, No. 4, friction head, 1½"x8" belt drive..... 250.
Screw machine, Garvin, No. 3, friction head, 1⅛"x7", belt drive..... 150.
Shear, 30" Bertsch, 16 gauge, 12" gap, foot power..... 85.
Shear, 10" Niagara circle, No. 20 gauge, cuts 58" dia. circle..... 40.
Separator, McKinzie, for chips, blower type, belt or motor..... 250.
Separator, 11 quart capacity, belt driven..... 50.
Separator, American, capacity 1½ bushels, belt driven..... 250.
Shaper, 16" Cincinnati back geared crank, with vise & countershaft... 425.
Shaper, 20" Kelley back geared crank, with vise & countershaft..... 400.
Shaper, 20" Barker, V Ram, back geared crank, with vise & counter 450.
Shaper, 20" American, back geared, crank, vise and countershaft..... 450.
Shaper, 24" Queen City, back geared crank, S. P. D. for motor..... 750.
Tapper R. & S., ½" capacity, horizontal, on pedestal..... 75.
Threader, 1" H & G, Eastern Mach. Screw Corp., belt drive..... 125.
Turret lathe, 2½"x24", J & L, geared head, tools for bar work..... 250.
Turret lathe, 3½"x36", J & L, geared head, with chuck for chuck work. 350.

USED AND REBUILT MACHINERY

FOR SALE BY

E. L. Klauber Machinery Co., 320-322 South Third St., St. Louis

Centering machine, revolv. head.
Cyanide furnaces, No. 22 Stewart.
Filing machines, bench and floor.
Lathes, 13" 14" 18".
Hardening furnaces, No. 28 Stewart.
Miller, Newton horizontal 16"x55".
Presses, No. 3&4 Crosby open back.
Saw, Racine 6x6 high speed, belt.
Screw machines, No. 2 Warner & S.
Shapers, 16"-20" Ohio sgl. pulley dr.

FOR SALE BY

M. A. Wertman Machinery Co., 623 Penton Bldg., Cleveland, Ohio

Drill, B14 Natco 22-spdl., rect. hd.
Grinder, No. 33 Abrasive surf. m. d.
Grinder, No. 80 Heald Internal, p.f.
Hack saw, 8x8 Atkins.
Lathe, 20"x10' Schamacher B. & E.
Lathe, 14"x6' Monarch, qcg. &dbg.
Lathe, 14"x6' Phil Smith QC&DBG.
Lathe, 14"x6' Prentice g.h., q.c.g.
Lathe chuck, 28" 3-jaw universal.
Nibbler, No. 2 Campbell 24" thr.md
Planer, 48"x10' Liberty openside.
Planer, 24"x6' Gray, Al cond.
Swager, No. 3 Langelier.never used
Turret lathes, 3x36 J & L, bar equip.

FOR SALE BY

Standard Machinery Co., 347 Indiana Ave., Grand Rapids, Mich.

Automatic, 1¼" Gridley Model F.
Boring mill, 42" Bullard vertical.
Boring mill, 34" Colburn vertical.
Boring mill, 24" Lucas horizontal.
Boring mill, 24" Binsse horizontal.
Drill, Baker 3" heavy duty.
Furnaces, Detroit Electric (4).
Lathes, 9" Porter-Cable Mfg.
Lathe, 3"x24" J. & L. flat turret.
Miller, model C-1 Becker hvy. vert.
Pipe machine, 8" Williams.
Presses, Waterbury Farrel S. S 7" shaft, 30" between uprights (2).
Welder, No. 259A12T. Gibb. Spot md.

FOR SALE BY

Service Co., - - - 3732 Cedar Ave., Cleveland, Ohio

WELDERS

Rebuilt 200-amp. Westinghouse A.C. stationary (3).
General Electric 200-amp. A.C. (2).
General Electric 400-amp. A. C. (3).
U. S. L. 200-amp. A.C. (1).
Lincoln 300-amp., gas engine dr. (2).
Lincoln 200-amp., gas engine dr. (3).
Lincoln 400-amp., gas engine dr. (6).
Lincoln 300-amp., A.C., D.C. (2).
Transformer type A. C. welders, 220-440 volt (7).

We rebuild, buy and sell welders.

FOR SALE BY

Standard Machine Co., Inc. P. O. Box 1668, Baton Rouge, La.

Crane, floor, hand power, Zeig Mfg. Co., 7 foot litt.
Cut-off machine, 4'.
Cutter grinder, Sterling universal.
Drill, Albany 12" variable speed friction.
Grinding machine, Landis pl. 10"x30"
Hammer, Barr pneumatic forging, size No. 1.
Hammer, steam, 1200-lb. McDougal & Potter, 12".
Lathe, Steinle turret, heavy duty.
Milling machine, Pratt & Whitney 4" 2-spline.
Saw, cold, Higley 5".
Shaper, Niles-Bement-Pond 20", traverse head.
Slab miller, Newton planer type, 20"x20"x5' bed.
Slotter, T. C. Dill No. 10-12.
Slotter, 30" Newton heavy duty.

All in good condition, were used in our plant.
To close out will sell as a unit or as a lot.

USED AND REBUILT MACHINERY

FOR SALE BY

Ott Machinery Sales, Inc., - 548 Second Ave., Detroit, Mich.

Automatics, B. & S. Nos. 00, 0, & 19; Cleveland Model A 3. 1½, 2½, & 4½; Fay 14"x19"; Acme Nos. 53, 54 and 55; Gridley. 4 spdl. ⅞", 1⅛", 1¼" & 2¼".
Boring mills, Bullard 42" & 52" 2 swivel heads.
Drills, h. s., b. b. Henry & Wright No. 2, 3, 4 and 6 spindle.
Drill, rad. Bickford 5'; Prentice 4'.
Gear shapers, Fellows Nos. 6.
Gear generators, Gleason 15" spiral bevel; roughers and finishers; Barber-Colman No. 3 and 12.
Grinders, Brown & S. No. 11, s.p.d. B. & S. Nos. 14 & 16 pl., m. d., No. 2 B. & S., surface; No. 3 B. & S. Univ., No. 3; Heald No. 60, 65, 70, & 75; Landis 10x36 plain d. c., m d.
Lathes, Hamilton G. H. 14"x6'; Hendey 18"x10' taper attachment 18"x8' Springfield, t. a.
Lathes, turret, J. & L. 2"x24" and 3"x36"; Warner & Swasey Nos. 2, 4 and 6, Steinle 24" 6¾" hole.
Milling mchs., B. & S. No. 2 univ. Kempsmith Nos. 12 & 33 Mfg.; Model B Becker vertical.
Presses, Ferracute P1, 2 and 3, and D G 53; assorted o.b.i., s.s. single and double crank, also toggle Metalwood 30 ton hyd. Elmes Hydraulic 300 ton.
Shaper, 20"&24" Steptoe VRam, m.d.

Many more good tools.; Your inquiries solicited.

FOR SALE BY

Lang Machinery Company, 28th St. & A. V. R. R. Pittsburgh, Pa.

Air compr., 12"x10" Chgo. "nsb" m.d.
Automatics (4) No. 5-A Potter & J.
Blower, No. 5 Sturtevant, 8¾" dis. b.d.
Bor. mill, 30" Bullard, thrd. att., spd.
Bor. mill, 42" Gisholt, r.p.t., s.p.d.
Bor. mill, 54" Bullard, 2 hds. r. p. t.
Bor. Mill, 76" Bullard, 2 Hds. m.d.
Bor. mill, 84" Sellers, 2 hds. b. d.
Bor. mill, 10'-16' Betts, 2 hds. b. d.
Boring mill, hor. 3" Rockford. tbl.
Bolt cutter, 1" Landis, sgl. hd., b.d.
Bolt cutter, 1½" Acme, sgl. hd., b.d.
Brake, leaf, 10'x¼" D.&K., b. d.
Broach, No. 3 LaPointe, m. d.
Buffer, Marschke dbl. end, 220/3/60.
Drill, No. 1 24" Baker, cap. 2½".
Drill, rad. 2' Fosdick, t. a., b. d.
Drill, radial, 2½' Fosdick, s.p.d.
Drill, rad. 3' Bickford, t. a., b. d.
Drill, radial (2) 3' Cincinnati-Bick.
Drills, upright, 14" to 32".
Drill, post, 30" Cannedy-Otto. b. d.
Drill, 4 sp. No. 2 Foote-Burt, m. d.
Drill, 16-spdl. No. 12 Pratt & W.
Grinders, single and double end.
Grinder, t. & c. No. 1 LeBlond.
Grinder, disc, dbl., 18" Diamond, b.d.
Grinder, plain, cyl. 10"x50" Norton.
Grinder, disc, No. 4 Gardner, 23" m.d.
Hammer, 100 lb. Bradley, cush. hel.
Hammer, forg. 5000-lb. Niles-B-P.
Hammers, st. drop 2000-6000 lb. Erie.
Keyseater, No. 4 Mitts & M. b. d.
Lathe, 14"x6' Carroll, q. c. g., b. d.
Lathe, 16"x6' American, q.c.g., b. d.
Lathe, 16"x12' Lodge&S. t. a., b. d.
Lathe, 20"x8' Lodge&Shipley, b. d.
Lathe, 24"x10' Bradford, p.c. g., b.d.
Lathe, 26"x12' Bridgeford, q.c.g., b.d.
Lathe, 28"x10' Sch. & B., q.c.g., bd.
Lathe, 30"x14' L. & S. q. c. g., m.d.
Lathe, 36"x12' Bridg, grd. hd., q.c.g.
Lathe, 36"x16' Sch. & B. l.c.g., b.d.
Lathe, 38"x14' Boye & E. q.c.g., b.d.
Lineshafting - pulleys - hangers.
Miller, plain, No. 2½ LeBlond, b. d.
Miller, No. 24 B. & S. tbl. 17"x72".
Millers, vert Nos. 4-B, 5-C & 6 Becker.
Planer, 42"x56"x10' Cin., 4 hds m.d.
Planer, 60"x48"x14' N.-B.-P. 3 hds. b.d
Press, No. 1-C standard, pedestal.
Press, embossing, 500-ton Am. b. d.
Press, No. 75 Toledo, open back 2" str.
Press, No 57 Toledo, 6" stroke.
Press, wheel, 300-ton N. B. P.
Punch, No. 5 J & H. 62" th. 1½"-1½".
Rolls, slip, 30" Pexto, hand.
Rolls, bend, 42"x¾" Bertsch, int. type.
Saw, shaping, 13"x13" Peerless m.d.
Seamer, dbl. No. 291-48" Niag. 18ga.
Shaper, 28" Queen City, b. g., b. d.
Shaper, 24" Cincinnati, b. g., b.d.
Shaper, 26" Smith & Mills, b. d.
Shaper, 20" Cincinnati, b. g., b. d.
Shear, Power, 36"x¼" United, b. d.
Shear, rotary, Lennox 42" thrt. ⅜".
Shear, Alligator, Lewis, cap. 1½".
Shear, plate, 10'x3/16" Niagara, m.d.
Shear, Squar. 10'x14 ga. Streine, m.d.
Tapping machine, 10" Baker, s.p.d.
Thread miller, No. 6 Lees-B. s.p.d.
Wiring & edging mch No. 2 Magee.
Welders, arc, 200-300 amp. Lincoln.
Unishear, No. 0 36"x16 ga., m. d.

USED AND REBUILT MACHINERY

FOR SALE BY

J. Blesser Mfg. & Machy. Co., 16th & Madison St., Springfield, Ill.

Grinder, No. 1½ Landis univ.
Lathe 36"x18' L. & S. arr. m.d. $1500
Milling mach. No 6 Transit plain.
Motor, 40 h. p. 3-60-220/440-1800.
Pipe machine, 2½" to 8" Curtiss.
Radial drill, 7' Bement.
Shaper, 12" G. & E. ..... $125.
Slotter, 13" Bement.
Trip hammer, 150 lb. Champion.
Valve refacer, B. & D. univ. m. d.

FOR SALE BY

Abbott Tool & Equipment Co., - 30 So. Clinton St., - Chicago

Brake, D. & K. 6' 10 ga. pan type.
Brake press, Ohis 10' 6", ¼" m. d.
Die sinker, No. 6 Jackson, cherrying attachment.
Grinder, safety wheel, h. d. surf.
Lathe, Amer. 20"x10' grd. hd., m.d.
Lathes, bench ½" cap. Hardinge.
Pipe machine, Bignall-Keeler 2" cap.
Press, No. 73½ Bliss b.g., s s., m d.
Saws, Racine 6x6 and Cochrane-Bly cold.
Shaper, 24" Milwaukee. b. g., b. d.

FOR SALE BY

General Blower Co., - - - 401 N. Peoria St., Chicago, Ill.

BLOWERS—FANS—EXHAUSTERS.

For Dust Collecting — Ventilating.
Oil and gas burners, cupolas, furnaces, etc.
Roots—Connersville and centrifugal blowers.
What are your blower requirements?

FOR SALE BY

Failor-Strafer Machinery Co., - 136 Liberty St., New York

Bar shear, 6" sq.
Boring mill, 100" Cincinnati, m. d.
Boring mill, 54" Colburn.
Conveyor and chain, 150', 4" links.
Grinder, No. 14 P.&W. surface b.b.
Grinder, 30"x96" Landis m. d.
Hammer, 1200 lb Chambersburg b.d.
Motor, 150 h. p. 900 rpm. 440-60-3.
Multi. punch No 5 H. & J. 7' 8".
Press, forging 1000 ton Mesta S-H.
Planer, Cin. 30"x20' 4 H box table.
Sq. shear, 8'x16 ga. Geo. Ohl.

FOR SALE BY

International Machinery Co., 3178 Bellevue Ave., Detroit, Mich.

Automatic, ⅜"-1 1/16", 4 sp. Cleveland model M, m. d.
Automatic, Gridley 4-sp auto., 1¼", model F, multiple spindle.
Boring mill, 42" Gisholt.
Drill, radial, 3½' American, gear box.
Drills, 21", 24", 28" Cincinnati.
Drill, 32" Reed-Prentice, t. a.
Drills, Hyspeed, 1,2,3, 4-spindle.
Drill, No. 242 Barnes Camel Back, m. d.
Drill, No. 3 Leland-G., single sp., m. d.
Drills, Natco mult., all sizes, hyd. & mech.
Forming rolls No. H-1220 Yoder, m.d.
Gear hob .5-5 A C Lees-Bradner m.d.
Gear cutters 4"x36" B. & S. (2).
Grinder, 84" Diamond face, m. d.
Grinders, surface, No. 78 Covell-H. hydraulic, motor in base (3).
Grinder, No. 4 B.&S. univ. comp. m.d.
Grinders, No. 11 H&S plain, m. d. (2).
Grinder, No. 70A Heald internal, duplex.
Lathes, turret, No. 4, 6, W. & S.
Miller, 18" Cincinnati mfg. type.
Miller, 18" Cincinnati automatic.
Miller, 24" Cincinnati duplex, m. d.
Press, P4 Ferracute, m d.
Press, No. 36 Niagara, m. d.
Shaper, 24" Gould & E., m. d.
Squaring shear No. 196 Niagara, 8' 18 ga.
Tappers, Nos. 1, 2, 2X Garvin.

USED AND REBUILT MACHINERY

FOR SALE BY

Joseph Hyman & Sons, - Tioga & Almond Sts., Philadelphia, Pa.

POWER PRESS SPECIALISTS

407A & 405B Bliss toggles, tie rod.
150 ton E52 Ferracute embossing.
No. 2½B Bliss toggle.
No. 205E Toledo, dble. crank, gap.
No. 79½ Bliss, 16" stroke tie rod.
No. D201 Ferracute tie rod.
Shuster straight & cut off ⅝"x14'.
Hundreds of presses of various types.

FOR SALE BY

Globe Machinery Company - 602 W. Lake St., - Chicago, Ill.

Shear, Niagara 8' 16 ga. foot power, with gauges.....$350.
Lathes, Oliver 16x8, q. c., com..$575.
Bridgeford, h. d. 28"x12', q. c. 785.
L. & S. 24"x12', q.c. complete 675.
No. 6 W. & S. 2½" opening.... 585.
No. 8 W & S tur. lathe for chk. 475.
Milling mach. No. 3 Cincinnati 675.
Shaper, 28" Cincinnati..... 350
Send us your inquiries.

FOR SALE BY

D. H. Prutton Mchy. Co., 5295 W. 130th St., Cleveland, Ohio

Automatic, Cleveland ½" model A.
Automatic, Cleveland 2½" model A.
Chucker, ½" Cleveland model M automatic.
Drills, ½" cap. Demco 4 spindle, power feed, b. b. (3)
Gear hobber, 5AC Lees Bradner.
Gear hobbers, No. 0 and No. Schuchardt & Schutte.
Grinder, disc, No. 120 Gardner.
Pointers and threaders, ½" Economy automatic. (4)
Press, No. 106 Bliss.
Press, cam drawing, No. 1 Bliss.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1211-1223 Hadley Street, St. Louis, Mo.

Air compressors, 30' to 2000'.
Bolt threader, Nat. 2".
Bolt threader, 2 heads, Nat. 1".
Boring mill, 5'-8' Betts extension.
Boring mill, 42" Colburn, (2).
Boring mill, No. 0 Barret.
Boring mill,, hor. 4½ bar Betts knee type.
Bulldozers, No. 3-4 and 8.
Drill, radial 3' American.
Drill, radial 3' Morris round column.
Drills, Colburn D4.
Drills, Baker 24".
Furnaces, various sizes.
Gear cutter, 60" G.E. spur.
Gear cutters, No 1&3 Adams hobbers
Grinder, No. 1 Wilmarth & M. univ.
Grinder, 12"x72" Landis, m. d.
Grinders, 13x66 Landis universal.
Grinders, 16x66 Landis cyl. plain.
Hammers, 500 & 25 lb. Little Giant.
Hammer, 200 lb. Bradley.
Hammer, steam 4000 to 250 lb.
Hammer, 80 Perfect.
Keyseater, No. 2 M&M.
Lathes, turret, No. 3 & 7 universal Bardons Oliver.
Lathe, 18"x8' L. & S.
Lathes, 26"x12 Flather, q. c. g.
Lathe, turret No. 6 Woods, tilted.
Lathes, turret, 24" Steinle.
Lathes, 3 Gridley 2½", Model F., 4 sp.
Miller, Pratt & Whitney spline.
Miller, No. 4 Brown & S., plain.
Miller, No. 3 Hendey, plain.
Miller, Waltham thread.
Miller, No. 2 Kempsmith, univ.
Millers, No. 1 U. S. hand.
Millers, Ingersoll, 27"x24"x10'.
Planer, 36x30x8 Cleveland open side.
Planers, 60"x48"x10' Gray, 2 heads.
Planers, 24"x24"x6' Gray, 1 head.
Planers, 36"x36"x10' Cincinnati.
Press, No. 2-3 & 4 Marshalltown, o. b. i., new.
Radial drill, 3'-4'-5'.
Saw, No. 14 Higley.
Saw, No. 2 Marvel.
Saws, 6x6 Acme.
Shaper, 16"-20"-24".
Shear, 3' Niagara, 16 ga.
Shears, 310 Niagara ring & circle 1/4"
Shears, 44" Bertsch sq., 16 ga.
1000 other tools available.

FOR SALE BY

United Machinery & Supply Co., 1241 Walton Ave., St. Louis, Mo.

Brake, 5' D. & K., box and pan.
Brake, 10' 10 ga. D.&K., a.c., m.d.
Generator, Eng. type, 125 kva., G.E.
Grinder, No. 13 B. & S. universal.
Paper beater, Emerson horizontal.
Press, No. 37 Excelsior, 54" wide.
Press, Hydraulic, 60 ton.
Presses, Toledo, No. 167 and No. 168.
Punch, horizontal, H & J. 1½". ⅝".
Rolls, corrugating, 6' Bertsch.

FOR SALE BY

Shunk Manufacturing Company - Auto Ave. - Bucyrus, Ohio

Brinnel test. mch., Steel City, style A
Butt welder, Toledo, cap. 1½" round.
Cylinder bor. mch. Beaman & S hor.
Drill press, Moline hole hog. 4 spdl.
Gas engine Miller, 85 h. p., 2 cyl.
Milling machines, Beaman & Smith, continuous (2).
Motor generator set, Lincoln, synch.
Lathe, engine, Reid.
Planer, Gleason No. 2, 38" bet. col.
Pumps, blowers and fans, water and air cooled engines.
Screw machine, Clev. auto. model A.
Steam engine, Skinner, 125 h. p.

FOR SALE BY

H. L. Morton Mchry. Co., 1078 Carlyon Road, East Cleveland, O.

Boring mills, Bullard Mult-Au-Matics, 6 spindles, 5" machines, 80% new (2).
Gear cutter, 60"x6" Brown & Sharpe.
Gear hobber, 5A Lees-Bradner.
Grinder, chucking, No. 28 Bryant; new in 1931, used 6 months.
Lathe, 21"x10' Le Blond, q. c. g., cone pulley, m. d.
Lathe, turret, No. 2 W. & S., bar fd. & collets, power feed to turret, cone pulley.
Mill, No. 2B heavy Brown & Sharpe plain, s. p. d.
Nibbler, Campbell No. 2, motor drive.
Press, No. 21 Bliss, o. b. i., 2½" stroke.

FOR SALE BY

Brown Machinery Co., - - 2333 N. 9th St., St. Louis, Mo

Brake, Chicago Steel, 9' 18 gauge.
Drills, 14, 16, 20, 22, 24 & 42"
Drill, rail, Foote-Burt.
Drills, 16 & 20 spindle Natco.
Gear hobbers, G. & E. 12".
Grinders, cylindrical, 12"x42" and 10"x30" Landis, 14x72" Norton.
Grinders, disc. No. 6-20 Besly; No. 220 Badger automatic.
Hammers vert. 40 & 80-lb. Perfect.
Lathes, 26"x12' Putnam, taper att.; 18"x8½' Rahn-Mayer; 18"x8' L. & S., pat. head; 16"x6' Bradford; 15"x6' Van Wyck.
Millers, plain, No. 3 Kempsmith; No. 2-B Milwaukee; 3½ Fox; 3-B Owen.
Millers, universal, No. 2 Hendey-Norton; Lincoln type, No. 4 Hendey; slab, Briggs type No. 11.
Planer, 42"x42"x10' Pond.
Planer, 26"x26"x6' Whitcomb.
Presses, toggle, Nos. 167, 168 Tol.
Presses, straightside, No. 73 Swaine; No. 7 Zeh & Hahnemann, S. S., SG81 Ferracute, grd., dbl. No. 35 Niagara.
Presses, o. b. i. Nos. 1, 2, 3, 4 Loshbough-Jordan; V & O No. 01.
Punches, sgl. end, Cleveland "C" 26" thr. ⅞ in ⅞"; Rock River Style L rapid action, 24" thr. ⅞" in ⅞"; No. 6 L. & A. 24" thr. ⅞" in ⅞"; No. 7 L. & A. 10" thr. ⅞" in ⅞".
Punch & shears, dble. end, No. L-10 Badger 10" thr. ⅞ in ⅞".
Riveters, No. 5A High Speed ⅝" cap.; Grant ⅝" 18" throat, M. D.
Saw, cold, Higley No. 14.
Screw machines., No. 2½ P. & W.; 1x15" P. & W.
Shapers, 16" Barker; 26" Stock bdge.
Shear, rotary bevel, ⅝" Lennox.
Shear, squaring, 10' Stark.
Welder, butt, Federal, 25 cy., 440 v.
Wood hog, Gruendler, 23½x34".

FOR SALE BY

Fort Wayne Machine Co., • • • • •Fort Wayne, Ind.

Drill, No. 14 Natco multiple.
Joggling machine, Hilles & Jones, 4" cap. 42" thoat..... $2000.
Mill, 24"x20"x8' Ingersoll fixed rail..... 1000.

Punch No. 10 Kling, 60" throat, electric equipped..... 1200.
Punch press, 181-S Toledo.
Punch press, No. EF Clev. grd., cap. 1" hole in ¾" plate, 60" thr.... 750.

Wanted—Large planer not less thna 20ft. bed for special purpose, Reasonable.

FOR SALE BY

Jones Machinery Co., • • • • Royal Oak, Michigan

No. 11 Toledo horn press.
No. 15 Robinson horn press.
No. 13 Niagara horn press.
No. 14 Niagara horn press.
No. P-3 Ferracute solid back press.
No. P-13 Ferracute deep thrt. press.
No. 103 Cons'd d. c., o. b. i. press.

Beaders, No. 100 Niagara power.
Drill, No. 23 Foote-Burt, s. p. d.
Lathe, 11"x4' LeBlond, g. h.
Mill, No. 2 B. & S. pl., arr. s. p. d.
Saw, No. 7 Atkins 8"x8".
Shaper, 24" Hollingsworth.
Shear, No. 236 Niagara squaring.

FOR SALE BY

Chas. Molitor Machinery Co. 118 So. Clinton St., Chicago, Ill.

Arbor press, motor dr. Atlas, 5 h. p.
Chucking machine, 33 New Britain.
Drills, Avey, Allen, Leland, Gifford.
Drill, radial American 24".
Drill, radial American 36" sensitive.
Drills, 2 spdl. Camel Back, 3 spdl. B.
Gear cutter, Hardinge B.&S. No. 3.
Grinder, No. 11 Brown&Sharpe cyl.
Grinder, 18"x24" disc.
Grinder, 6x3 Norton cyl.
Lathe, Mueller 18"x8' q.c.g.dbl.b.g.
Lathes, W.&S., Acme, Dreses, Fox.
Lathe, turret, Greenlee 2½"x26".
Lathe, production, L.&S. 18"x8' auto.
Lathes, 22"x10' L.&S., qcg., dbl.b.g.
Lathe, Reed 18x8 auto prod.

Key lathes, dbl, and cock grinder, Warner & Swasey.
Miller, 1Y Brown & Sharpe.
Miller, Brown & Sharpe No. 12.
Miller, No. 3 Kemp. univ., dbl. bg.
Miller, No. 3 Kemp. pl., dbl. b. g.
Miller, Pratt & Whitney automatic.
Millers, Nos. 1&2 Knight dr.&mill.
Nut tappers, sgl. and 4 spdl.
Presses, No. 3, & 5 dbl. action cam.
Screw machine, Bardons & Oliver.
Screw mach., No. 7 Foster; No. 1 Brown & Sharpe.
Screw mach. W.&S. No. 1, 2, 3, 4.6.
Shapers, P.&J., 16", 24", Steptoe 18".
2000 Brown & S., Cleveland collets.

WANTED TO BUY

W. C. Roll Supply Co., • 6035 Cary Ave., Cincinnati, Ohio

Boring machine, 14' table, old style.
Press, hydraulic, 1000 or 1500 ton capacity.

VICTOR'S BARGAINS
IN NEW
CRITCHLEY TYPE EXPANSION REAMERS

Letter				Our Price
8-A	1/4	Expands to	9/32	$2.00
7-A	9/32	Expands to	5/16	2.00
6-A	5/16	Expands to	11/32	2.00
5-A	11/32	Expands to	3/8	2.00
4-A	3/8	Expands to	13/32	2.00
3-A	13/32	Expands to	7/16	1.75
AA	27/64	Expands to	15/32	1.35
A	15/32	Expands to	17/32	1.35
B	17/32	Expands to	19/32	1.45
C	19/32	Expands to	21/32	1.75
D	21/32	Expands to	23/32	1.75
E	23/32	Expands to	25/32	2.25
F	25/32	Expands to	27/32	2.25
G	27/32	Expands to	15/16	2.25
H	15/16	Expands to	1 1/16	2.50
I	1 1/16	Expands to	1 3/16	2.75
J	1 3/16	Expands to	1 11/32	3.00
K	1 11/32	Expands to	1 17/32	3.50
L	1 17/32	Expands to	1 25/32	3.75

Set AA to H—27/64 to 1-1/16.....$15.00

SEND QUICKMAIL COUPON No. 52 FOR OUR GENERAL CATALOGUE.

VICTOR MACHINERY EXCHANGE

251 CENTRE ST., NEW YORK N. Y.

30 YEARS OF PROGRESS

Established 1907—original floor space 500 square feet.

1928—moved to Spring Grove Ave. plant with 50,000 square feet of floor space.

Now moving to our new 11 acre plant at Tennessee Ave. & Paddock Road —80,000 square feet of floor space on main floor. 10 cranes ranging in capacity from 2 tons to 30 tons. Plant served by B. & O. R. R. and N. & W. R. R. 3000 feet of switch track on premises.

The largest and best equipped plant in the United States devoted exclusively to rebuilding machine tools. Visitors welcome at all times.

Direct Western Union and Postal Wires

Telephone Melrose 1241

The Eastern Machinery Co.

1000 Tennessee Ave., Cincinnati, Ohio

MODERN MA

MILLING MACHINES

No. 4 Cincinnati Vertical, m.d., Timken Bearings, National Standard Spindle, latest type.
No. 4B, 6 Becker Vertical, belt.
Ingersoll Vertical Miller, m. d., 40" rotary table.
No. 1 Beaman & Smith 2 spdl. Open Side.
No. 3—24" Cincinnati Hydromatic, m.d. latest type.
24" Cincinnati Plain Automatic, m. d. National Standard.
24" Cincinnati Duplex Automatic, m. d.
24" Cincinnati Duplex Automatic, belt.
48" Cincinnati Plain Automatic, s.p.d.
No. 33 Kempsmith Mfg., m. d.
18" Cincinnati Mfg., m. d.
28" Cincinnati Duplex Automatic, belt.
6x80" Pratt & Whitney Thread, m. d.
48" Ohio Tilted Offset, m. d., National Standard Spindle, Timken Bearings.
C66A Newton 3 spindle Continuous Miller, 48" dia. table.
No. 2 Cincinnati Plain High Power, m.d.
No. 2 H. D. LeBlond Plain, cone.
Nos. 3, 4 Cincinnati Plain, cone.
No. 3 Kempsmith Plain, cone.
No. 3 Hendey-Norton Plain, cone.
No. 13B Brown & Sharpe Pl., National Standard, spindle.
No. 3B Milwaukee Plain, double over-arm, m. d.

ENGINE LATHES

11"x4' South Bend, m. d.
14"x8' Lodge & Shipley, 3 step cone.
14"x8' Reed-Prentice Geared Head.
16"x6' Hendey Yoke Head, taper.
16"x14' Lodge & Shipley Selective Head, m. d., taper.
18"x8' Greaves-Klusman, cone hd., taper
18"x8' Lodge & Shipley Selective Head, s. p. d.
18"x10' Lodge & S. Patent Head, taper.
20"x6' Hendey Geared Head, m. d.
20"x6' Hendey Yoke Head.
20"x8' American, Bowl Head 3 step.
20"x8' Boye & Emmes, 3 step.
20"x10' American, bowl hd., 3 step, taper.
20"x10' Boye & Emmes, cone.
20"x10' Hendey Yoke Head, taper.
20"x10' LeBlond, 3 step.
20"x12' Lodge & S. Patent Head, taper.
22"x10' L. & S., Selective Head, s. p. d.
24"x8' Hendey Yoke Head, taper.
24"x10' American, bowl head.
24"x10' Boye & Emmes, m. d.
24"x10' Greaves-Klusman, 3 step.
24"x10' Schumacher-Boye, 3 step.
24"x12' LeBlond, 5 step.
24"x12' Schumacher-Boye, 3 step.
25" raised to 32"x12' LeBlond, 3 step.
26"x12' Rahn-Larmon, 3 step
27"x14' American, 3 step taper.
30"x11' American, 5 step.
30"x14' Lodge & Shipley, 5 step.
30"x14' Lodge & S. Patent Head, taper.
36"x11' American, 4 step.
36"x29' Johnston, 5 step.

GRINDERS

20x144" Landis Plain Cylindrical, m. d.
14" Pratt & Whitney Vertical Sur., belt.
16x48" Diamond Automatic Surf., m. d.
No. 2 Diamond Automatic Surface, belt.
No. 3 Brown & Sharpe Surface, belt.
60" Springfield Face, M. D.
60" Bridgeport Face, belt.
No. 78 Wilmarth & Norman Auto. Surface M. D. in base.
No. 33 Abrasive Vertical Surface, M.D. in base.
No. 3 Bryant Semi-Automatic Hole, m.d.
No. 70 Heald Internal, belt.
No. 72A5 Heald Plain Internal, 2 m.d. hydraulic, very late.
No. 11 Giddings & Lewis Teromatic, 3 motor drive.
No. 1 Norton Universal Tool & Cutter, belt.
No. 2 Oesterlein Universal Tool and Cutter, belt.
Gisholt Tool Grinder, belt.
No. 21, 31, 41 Oliver Drill Grinders, m. d. in base.
No. 3 B. & S. Universal Grinder, belt.
No. 4 Landis Universal, belt.
No. 50, 55 60, 65 Heald Cylinder, belt.
6x18", 10x24", 10x36", 10x52, 10x72", 12x36", 12x52", 12x72", 16x32", 16x52", 16x72" Landis Plain Self-Contained Cylindrical, belt and motor driven types.

Write for our New Stock List No. 37.

EASTERN MACHINERY CO.,

CHINE TOOLS

6x32", 10x36", 10x50", 10x72", 12x72" 14x72" Norton Plain Cylindrical, belt and motor drive.
No. 24-53" Gardner Horizontal Disc. Grinder, m. d.
No. 4 Gardner B.B. Disc, belt.
No. 12, 14, 120 Gardner Disc, center type.

RADIAL UPR. DRILLS

3' American Triple Purpose, m. d. on arm, very late.
5' Cincinnati Bickford Universal, m. d.
6' Dreses Universal, gear box.
5' American Triple Geared, gear box.
2½', 3' Carlton Sensitive.
4' Hammond Jack-Knife.
Nos. 216, 217, 220, 310, 314, 315 Baker H. D. Upright.
D-2, D-3, D-4 Colburn H. D.
Nos. 2, 4, 14, 22 Colburn Mfg.
4 spindle No. 2 Colburn Mfg.
No. 210 Barnes all Geared-Self-Oiling.
21", 22", 24", 26", 32", 40" Aurora Upright.
21", 24", 28", 36", Cincinnati Bickford Upright.
21" 25" Weigel Upright.
22" Barnes all Geared Self-Oiling.
4 spindle 22" Barnes all Grd. Self-Oiling.
3 spindle 22" Hoefer Gang Drill.
3 spindle 22" Rockford Gang Drill.
4 spindle No. 2 Foote-Burt Heavy Duty.
4 spindle No. 4 Foote-Burt Heavy Duty.
4 spindle Moline Hole Hog.
5 spindle Detroit Semi-Automatic.
6 spindle No. 2 Foote-Burt.
6 spindle 21" Hoefer Gang.
No. 00S Garvin Horizontal Duplex.
6 spindle National-Acme Semi-Automatic Horizontal.
No. 1 Pratt & Whitney 2 spindle Gun Barrel.
D2 Fox Multiple Straight Line.
No. 2 Baush Multiple.
No. 5D, 7D Moline Hole Hog, late type.
No. 10-C, 18, 30 Natco Multiple, m.d.
No. 25 Baush Multiple.
No. 26C Fox Multiple.
No. 37 Natco Multiple.

BALL BEARING DRILLS

2 spindle Allen, 12" overhang.
2 spindle No. 1 Avey.
2 spindle No. 2 Avey.
2 spindle Fosdick.
4, 5 spindle Henry & Wright.
2 spindle Leland & Gifford.
2 spindle Leland & Gifford direct m. d.
3 spindle Demco, power feed.
3 spindle Sipp, power feed.
4, 8 spindle Allen.
4 spindle No. 3 Avey.
6 spindle No. ½ Avey.
6 spindle No. 1 Avey-Matic power feed.
6 spindle No. 3 Avey.
4 spindle Fosdick, power feed.

PRESSES

No. 168 Toledo Toggle Drawing.
No. 1½ Bliss Cam.
No. 3A Bliss Horning.
D2, DD2 Ferracute Dbl. Action Drawing
P2, P3, P4 Ferracute Stiles type.
No. 5 Bliss Stiles type.
No. 6 Waterbury-Farrel Double Crank.
No. 30 Toledo Stiles type.
No. 92B Toledo, double Crank.

PLANERS

48"x48"x15' Niles 4 heads, reversing motor drive, D. C. electrical equipt.
48"x48"x14' Niles, 4 hds., reversing m.d.
48"x48"x14' Niles, 3 hds., reversing m.d.
42"x42"x12' Niles Heavy Pattern, 4 heads, reversing, m. d.
42"x42"x14' Niles, 2 hds., reversing m.d.
42"x42"x14' Niles, 4 hds. reversing m.d.
36"x36"x12' Niles, 4 hds., belted m. d.
36"x36"x10' Niles, 2 heads, belt, heavy pattern
36"x36"x14' Niles, 3 heads, m. d.
33"x33"x8' Ohio, 2 heads, belt.
30"x30x 10' Gray, 1 head, belt.
30"x30"x10' American, 1 head, belt.
24" Coulter Openside, belt.

BORING MILLS

53" Niles Heavy Pattern, m. d. with D. C. elec. equip., p. r. t.
51" Niles, 2 heads.
30", 36" Gisholt, belt.
36", 42" Bullard Vertical Rapid Prod. type, belt.
36" Colburn, gear box, 2 heads.
37" Niles Vertical, 2 heads, m. d.

GEAR MACHINERY

Nos. 3, 12 Barber-Colman Gr. Hobbers.
No. 12 Barber-Colman Gear Hobber, double overarm.
No. 6 Fellows Gear Shapers, belt.
No. 5A Lees-Bradner Gr. Gener., belt.
No. 3 Brown & Sharpe Gear Cutter, belt.

1000 Tennessee Ave., CINCINNATI, O.

Good Used Machinery

AIR COMPRESSORS; Curtis 9x9 dbl. cyl. vert.; Ing-Rand 5x4& 7x6 horiz;. Bury 12x12 horiz.

BORING MILLS; Niles 36" c. d. Baush 44" m. d. N-B-P 54" s. p. d. Vert. with 2 heads; Lucas 2½" bar s. p d. and Barrett 5" bar c. d. horizontal; Bullard 51" Vertical 2 heads.

DRILLS (RADIAL); Mueller 2½', Fosdick 2½', Prent. 3'; Carlton 4' all gear box drive; Hammond 4' sensitive.

DRILLS (H. S. B. B.); H & W 2, 4, 5-sp.; Allen 2 & 6-sp; Avey, Demco, Lel-Giff. 1-sp.

DRILLS (MISC.); Baker No. 217 (2) & No. 314 Hvy. Duty; Hamilton 42"S.H.;Barnes 26" S.H. tap.attach.; Barnes 20"&24" 1-sp.&20" 4-sp. & 24" 3-sp. all grd. camel back; P & W No. 12 Multi-Sp.

GEAR CUTTERS; G & E 36", G & E 48", G & E 60" & B & S 26" s. p. d. automatic spur; Fellows 36" gear shaper.

GRINDERS; P & W 12" vert. surf.; Cin. No. 1½ & B & S No. 12 univ. tool, B & S Nos. 11&16 plain, Heald No.60B.B. cylinder.

HONING MACH.; Hutto 2-spindle Vert. M. D.

KEYSEATERS; M & M No. 0 & Davis No. 1 vert.

LATHES; Reed-Prent. 16"x8' grd. hd.; LeBlond 18x8', Lehmann 18"x9', Hendey 18"x8'; Amer. 22x8', Whit. Blais. 22"x8'; Davis 22"x10'; L & S 20"x10', S-B & E 20"x10' q. c. g.

MILLING MACHINES; Ohio No. 24, Kemp. No. 3, B & S No. 3, Rock. No. 2½ univ.; B & S No. 2, Amer. No. 1½, Cin. No. 3, B & S No. 3, Hendey No. 3, LeBlond No. 3, B&S No. 3 s.p.d. plain. Becker Model "B" &No 6 vert.;Kemp. No.33 s.p.d.Prod.

PLANERS; Gray 30"x30"x10', Gray 60"x48"x10', 2 hds.; N-B-P 48" x 20' 4 hds. Gray 28"x28"x6' 1-hd.

PUNCH PRESSES; Bliss No. 19 o. b. i.; Amer. Can No. 4½ arch; Toledo No. 3 o.b.i.; Fer. No. PG-3 cl. back.

SAWS (HACK); Racine 6x6" H. S. Atkins 8x8" H. S. Peerless 9x9" H. S., M. D. Peerless 6x6" M. D. Univ. Shaping

SHAPERS; S & M, G & E, Ohio, Mil., Q. City, Davis, Cin. 16"; Ohio & G & E 20"; S & M., Q. City, Rock, 24"; Ohio 26"; Cin. 24" s. p. gr. box; Rock. 24" m. d. gr. box; Rhodes 3½" Vertical.

SCREW MACHINES; B & S No. 2 Turret Former; Nat. Acme. Nos. 515, 52, 55, & 56 4-sp; Gridley 4-sp. ⅞" & 4-sp. 1 ¾" cap

TAPPING MACHINES; (2) Garvin No. 2 Vertical Automatic.

TURRET LATHES; Libby 18" m. d, grd. hd. ;W & S No. 2-A univ.; Foster No. 7 all power feeds.

Above is only small part of our large stock on hand.

McDONALD MACHINERY CO.

1531-35 No. Broadway, St. Louis, Mo.

—PARTIAL LIST—

Automatics
No. 2G Brown & Sharpe.
3¾", 4¼" Gridley sgl. spindle.

Boring Machines (Hor.)
5" bar NBP. floor type.
5" bar Newton Portable.
No. 3 Hamilton, 4½" bar.
No. 3-A Universal, 3" bar.
No. 1 Cleveland, 2½" bar.

Boring Mills (Vertical)
24", 36", 42" Bullard, "New Era".
30" and 52" King.
42", 48", 54" and 60" Colburn.

Drills (Ball Bearing)
1, 2, 3, 4, 6 Spindle L-G.
1, 2, 3, 4, 6 Spl. Henry & Wright.
2 and 4-spindle Avey.

Drills (Mfg.)
32" Cinn.-Bickford sliding head.
No. 2 Colburn, 1, 3 and 4-spindle.
Nos. D-4, D-5, Colburn.
No. 210 1&3 spdl. Barnes.
20" Barnes, all geared.
No. 14 Natco Multiple.
No. 4 Bausch. mult.

Drills (Radial)
4' American Triple purpose.
8' American, full univ., m. d.
6' Western.
6' American Triple purpose.

Gear Cutters
Nos. 2, 3 & 12 Barber-Colman.
No. 18-H G. & E. hob.
No. 16HS Gould & Eberhardt.
Nos. 6, 62, 65 Fellows.
6" Gleason bevel gear.

Grinders (Plain)
Heim Centerless.
Nos. 10 and 12 B. & S.
6"x32" Norton.
10"x18", 24", 36" Norton.
10"x50", 72", 96" Norton.
10"x36", 52" Landis.
14"x36", 50", 72" Norton.
18"x96" Norton, m. d.
20"x168" Landis, m. d.

Grinders (Univ.)
No. 13 B. & S., cutter & tool.
No. 2 Bath universal.
No. 4—12"x66" Landis.

Grinders (Misc.)
No. 1½ Landis, Internal.
No. 70 Heald, Internal
No. 10 Blanchard surface.
No. 16A Blanchard surface.
No. 25 Heald rotary surface.
15"x17"x72" Norton, o. s., surf.
No. 1 Gardner, hyd., face.

Lathes
No. 3 L. & S. Duomatic.
14"x6' American geared head T.A.
16"x8' L. & S., T. A.
18"x8' L. & S. sel. grd. hd.
18"x10' American geared head.
20"x8' American geared head.
20"-22½"x8', 14' L. & S. sel. g. h.
24"-27½"x12', L. & S. sel. g. h.
25"—27"x26' LeBlond.
36"x18' L. & S. Patent hd.
36"x30' Rahn-Larmon grd. hd.
54"x23' Johnson, T. G.
66"x21', 39' Putnam t.g., m. d.

Millers (Plain and Universal)
Nos. 0, 1½, 2, 2-A B. & S.
Nos. 2-B, 3-B, 4-B B. & S.
No. 3-B Milwaukee s.p.d.
Nos. 2 & 3 Cinn. h. p., s. p. d.
No. 4 Kempsmith Maximiller.
Nos. 4 & 5 Cinn. h. p., s. p. d.

Millers (Mfg.)
No. 3 Sundstrand Rigidmill.
No. 5 48" Cincinnati hydromatic.
16" & 24" Cincinnati automatic.
No. 4, & No. 8 Lees-Brad.
36"x36"x12' Newton Duplex.
38"x44"x20' Ingersoll slab.
48"x36"x16' Ingersoll adj. rail.

Millers (Vert.)
No. 1½ Milwaukee.
Nos. 2 & 3 Cincinnati h. p.
No. 6 Becker vertical.
No. 5 Brown & Sharpe.

Planers
24"x24"x12' Gray.
30"x30"x14' Gray, rev. m. d.
30"x30"x6', 18' Cincinnati.
36"x36"x8', 18' Cincinnati.
36"x36"x12' and 24' Gray.
36" x 36" x 14' - 24' Cleveland o.s.
42"x42"x30' N-B-P, Rev. m. d.
48"x48"x14' Liberty, openside.
48"x48"x16' N-B-P.
60"x48"x16' Gray max. service.
72"x60"x16' American.

Presses
No. 106 Bliss Gap, dbl. crank.
No. 96-F Toledo, double crank.

Shapers
16" Gould & Eberhardt, m. d.
20" & 24" Gould & Eberhardt.

Turret Lathes
No. 4 Warner. & Swasey.
No. 1-A Warner & Swasey.
No. 2-A W.&S.Timken Bearings.
No. 3A Warner & Swasey.
No. 4-A Warner & Swasey.
No. 2-B and No. 3-B Foster.
No. 4-L Gisholt, 9½ h. s.

HILL-CLARKE MCHY. CO.
645 Washington Blvd., Chicago, Ill.

PRICE—PERFORMANCE PROMPT DELIVERY!

New located in our new, larger office and salesroom at 109 So. Clinton Street, which together with our huge warehouse of over 75,000 square feet, switch tracks and cranes—provide increased facilities to serve you.

"A MACHINE FOR EVERY PURSE and PURPOSE"

Large Heat Treating Furnace —conveyor type. Used less than 30 days. Cost new about $35,000. Complete with pyrometer, $5,000.

Angle Roll, No. 16 Kane & R., m.d.
Arc Welders, 200, 300 & 400 amp.
Boiler, 20 HP. Vert. Steam, 100 lbs pressure, 1 HP. Coal Stoker.
Boring mills, Bullard 30", 36", 53". No. 3A Univ. horiz. 3" bar; B.&S. 4½" bar; B. & S. 3" bar.
Brakes, power, Chgo. St. 10' 3/16", 10' 10 ga.; 6' 3/16"; 6' 12 ga.; 8' ¼"; 8' 10 ga.; Box & Pan 8' 10 ga., m. d.
Die Sinker, No. 2 Pratt & Whitney.
Dieing out press, H. & W. 25 ton.
Drills, Multiple, Nos. 11 & 12 Natco.
Drills 25" Baker; 2, 3, 4 spindle.
Eyelet machines, Penn. motor drive.
Filing mach. No. 3 Theil prec. m.d.
Gang Slitters, 32, 36 & 48".
Generator set, Westinghouse 57 H.P. A.C. 38 KW 152 Amps., d. c.
Grinder, disc, Gardner 30", b. b.; 53" horizontal; cyl. Landis 12x42"; 14x27 Norton.
Hammers, 100 lb. Bradley, helve.
Ironworkers, Shatz 6x6 angles; No. 1½ Buffalo; Smith 6x6 with notcher.
Lathes, spinning, b.b. 30", 22".
Lathes, 25"x16'; 24"x10'; 14x12.
Millers, prod. Lincoln type Hendey 24"; No. 2 Cinc. a.p.d. Univ., vert. hd.; div. hd.; No. 4 Cinc. pl.; Vert. No. 3 Knight; No. 1 B.&S., m.d.; pl. No. 2 B. & S. a. p. d. No. 1-A K. & T.
Multiple Punches, Wells, 6'.
Nibblers, Campbell, No. 1 & 2.
Planers, 72"x18', 3 heads, 48"x14' D.&H. Openside; 30"x8'; 36"x8'; 24"x8'; 24"x6'.
Press, hydraulic, 200 ton, Watson-Stillman, double ram, 38"x62'.
Press brake, 10' 18 ga.; 10' 3/16".
Punch & Shear, No. 51 & 53 Beloit.
Radial drills 2', 3½; 2½; 5 and 6'
Rivet spinners, No 107 Grant.
Roller die mach. 5-sp. Mishawaka.
Rolls, 14' Bertsch, pwr. elevation. drop end, m. d.; 8" diam. rolls; 50"x3½" power; 48"x10 ga.
Saws, shaping 6"x6"; hack 9"x9".
Saw, friction No. 1 Ryerson.
Shapers, 18"x24" G.&Eber. a.p d. 24" Ohio, m.d., tilting table; 20"
Queen City a.p.d.; 14"—16".
Shears, 10' 14; 12' 14; 13' 3/8" 20" gap; 13' 5/16; 6' 14 ga; 6' 16 ga.; 52" 16 ga.; 6' 18 ga.; 10' 3/16 m.d.; 8' 10 ga.; 10' 10 ga.; 8' 3/16.
Shear, beam and angle, Pels 20"x 75 lb.; 8x8x¾" angles m. d.
Stake riveter & punch, 48" m. d.
Turret Lathes, W.&S., 3-A, 4, 6.
Wire Straightener, No. 1 Schuster 3' cut-off; ⅜" Nilson, 8'; Wells, No. 5, 3/8"x22'.; Shuster ⅜" cap.
Welders, new, Dyer, 10 KW 24" arms $300., 15 KW 24" arm $375.
Gun welder, 50 KVA Federal Port. 440 volts, 99% new. Welders 30 KVA Press welder m. d.; Butt welder No. 6A National.

PRESSES

Dbl. Crk.; 5H Bliss, 98" bet. 6" str., tie rod const.; No. 77½ Bliss, gap frame; 93C Toledo, 5" str., 48" bet.
Straight Side; No. 56 Toledo; 305 Bliss tie rod, 8" str., 5" shaft. 5C Bliss tie rod, 5" str.; No. 6 Bliss.
Toggle; No. 3½ C Bliss draw & lift 10"; 408-B Bliss; No. 165 No. 167, No. 168 Toledo.
O.B.I. No. 0-1-2-3-4-5-6-7.

INTERSTATE MACHINERY CO.
109 S. CLINTON ST., CHICAGO

Good Machinery, *Attractively* Priced

BORING MILLS — Horizontal

Cleveland 2½" bar.
Niles-Bement-Pond No. 1 portable.
Beaman & Smith 5" bar.
Ryerson No. 12, 4" bar.
Niles-Bement-Pond HB3, 5" bar.

AUTOMATIC SCREW MCHS.

Brown & S. No. 0, 00, 0G, 2, 2G.
Gridley 9/16", 7/8", 1¼", 1⅝" 2⅝".
New Britain Nos. 22, 24, 33, 454.
Potter & Johnston Nos. 6A and 7A.
Cleveland 2", 3½", 3", 4" model A.

GEAR CUTTING EQUIPMENT

Brown & Sharpe No. 3—26, No. 3—36, No. 5—50" Gear Cutters.
Fellows No. 6, 61, 615 gear shapers.
Fellows Nos. 7, 71, 712 gear shapers.
Fellows No. 8B burnisher.
Lees Bradner planisher.
Gleason 24" gear planers.
Barber Colman Nos. 2, 3 12 hobbers.
Cleveland 8 spindle gear hobber.

BORING MILLS — Vertical

Bullard 24".
Niles Bement Pond 52", 2 heads.
Niles 7-10' Extension.
Pond 90".

GRINDER

Heald No. 72 Hydraulic.

LATHES

Pittsburgh 50"x73' grd. hd.
Putnam 50"x30' grd. hd.
Pittsburgh 36"x38' grd. hd.
New Putnam 36"x28' grd. hd. c. d.
American 36"x21' grd. hd. Q. C. G.
Bridgeford 36"x60' boring & turning.
Bridgeford 36"x60' boring.
McCabe 26-45"x12' double spindle.
McCabe 24-48"x14' double spindle.
LeBlond 25"x12', cone drive.
Greaves Klusman 16"x8' m. in base.
Monarch 14"x10' grd. hd.
And 200 other lathes from which to select.

AN EXCEPTIONAL "BUY"

7—New 36'x28' Putnam geared head Lathes — Price each — $7000.00.

MILLING MACHINES
Manufacturing

Gooley & Ed. (Briggs) types A&B.
Cincinnati 18", 24" automatic.
Ingersoll No. 3 combined hvy. duty.
Ingersoll 24"x24"x12' planer type.
Ingersoll 24"x24"x12' adj. rail.

RADIAL DRILLS

Dreses 3'.
Reed Prentice 4'.
Niles Bement Pond 5', 8'.

DRILL PRESSES—High Speed

An assortment of 1, 2, 3, 4 and 6 sp. high speed ball bear. drill presses. What are your requirements?

MILLING MACHINES
Vertical and Thread

Beaman & Smith No. 1 vert. and horizontal spindle.
Becker No. 4B, C-1 and C vertical.
Pratt & Whitney 6x14.
Kearney & Trecker No. 1 vertical standardized spdle nose.

LATHES—Manufacturing

Porter Cable 9x14.
Adams short cut.
LeBlond Nos. 9 and 12 Multi-cut.
Sundstrand Stub.

MILLING MACHINES
Plain and Universal

Cincinnati No. 2, 3, 4 Plain, SPD.
B. & S. No. 2, 2B, 3, 4 Plain SPD.
Brown & Sharpe No. 2, 4 universal.
Kearney & Trecker No. 1 plain standardized spindle nose.

DRILL PRESSES—Mult. Spdle.

Natco Nos. 12, 13 and 22.
Pratt & Whitney No. 12.
Natco C-11 high speed.
Natco C-13-H hydraulic.
Baush No. 4 rect. hd. 58x42; 30 sp.

TURRET LATHES and SCREW MACHINES

Libby 26" Turret: grd. hd.; 7⅝" spdl.
Gisholt 24" Turret.
Warner & Swasey No. 6.
Foster No. 7 Universal.

1000 other machines in stock—Ask for details

MOREY MACHINERY CO., Inc.
410 Broome Street, New York, N. Y.

High Grade Machine Tools

Lathes

36"x14' Boye & Emmes, cone, q. c.
36"x20' Bradford cone, Loose Chge.
28"x48"x10' Harrington, Slid. Bed.
26"x14' Bridgeford Grd. Hd. S.P.D.
32"x16' Bridgeford Grd. Hd. S.P.D.
42"x18' Bridgeford Grd. Hd. S.P.D.
24"x10' Greaves Klusman Grd. Hd. S. P. D.
24"x10' American Grd. Hd. S.P.D.
26"x16' Bradford Cone Drive. Q. C.
20"x10' Lodge & Shipley 3SCD QC.
16"x10' LeBlond 3 SCD,DBG,QC.

Grinders

16"x52" Landis self contained.
No. 2 Brown & Sharpe Universal.
16"x48" Landis Crankshaft.
16"x48" & 72" Landis Crankshaft.
Type A Production Abrasive Finishing Nos. 50, 55, 60, 65 and 70 Heads.
6"x18" Landis Plain, Self Contained.
10"x52" Landis Plain, Self Con.
Rivett Internal Grinder.

Gear Cutters

No. 3, 26" Brown & S. Gear Cutter.
Nos. 1, 2, 4 Adams Farwell Gear Hb.
18-H Gould & Eberhardt Hobber.
6", 11", 18" Gleason Gear Generators.
No. 6 Fellows Gear Shaper.
No. 3—36" B&S Gear Cutter.
No. 5—60" Newark Gear Cutting Machine.

Bolt and Pipe Threaders

¼" Landis Double Spindle Lanco Hds.
2" Landis Double-Spindle.

Boring Mills

42" Colburn Vertical Mill Rap. Trav.
36"-44" Niles-Bement-Pond Side hd. Mill, Rapid Traverse.
42" Niles Boring Mills, 2 heads.
14' Betts, Cone Drive.
60" Niles Boring Mill, 2 heads.

Milling Machines

24" Cincinnati Automatic.
24" Cincinnati Duplex.
No. 4 Cinti. High Pwr. Univ. S.P.D.
No. 2 & 3 Kempsmith Plain, M. D.
No. 3 LeBlond H. D. Plain.
No. 3 Kempsmith Universal.
5B Becker Vertical Mill.
5" Pratt & Whitney Automatic.
18" Cincinnati Plain Mfg. Miller.
Briggs Manufacturing Miller.
No. 7-H Becker Lincoln type.
No. 1 Knight Miller and Driller.

Planers

30"x30"x8' American two heads.
30"x30"x16' Gray, two heads.
24"x6' Ohio.
24"x24"x14' Gray, box table.
42"x42"x10' Cleveland Openside, 3 heads, A. C., M. D.

Radial and Upright Drills

24" Cincinnati Bickford Upright, tap.
2½, 3, 3½, 6' Cinci.-Bick. S. P. D.
3, 3½, 4 American Trip. Pwr. S.P.D.
3' Bickford Plain, S. P. D.
No. 2 Colburn Mfg. H. D. 2-spindle.
No. 40 Natco Straight Line Multi.

Shapers

20" Ohio, motor driven.
16", 20", 24" Gould & Eberhardt motor drive, thru gear box.
16", 20" and 24" G. & E., cone drive.

Miscellaneous

No. 3-B LaPointe Broaching Mche.
80lb. Bradley Cushion Helve Hammer
High Speed Riveting Hammers.
Nos. 1& 3 Baker Keyseating Mches.
No. 2 Mitts & Merrill Keyseater.
Nos. 1 & 2 Davis Keyseaters.
V-18 Amer. Vert. Broaching Mche.
15, 30 & 50 Ton Lucas Forcing Pr.
96A Toledo Double Crank Press
No. 163B Consolidated Dbl. Crank.
No. 1 & 2-X Garvin Tapping Mches.
No. 4 W. & S. Univ. Turret Lathe.
Nice Variety of Sizes of Presses.

Write for Complete Catalogue—We Buy, Sell and Exchange

Cincinnati Machinery & Supply Co., 217 East Second St., CINCINNATI, OHIO

Quality Tools—Prompt Delivery

ENGINE LATHES

14"x6' American geared head.
16"x6' Monarch.
16"x8' Lodge & Shipley grd. hd.
16"x10' Lodge & Shipley grd. hd.
18"x8' Schumacher Boye.
20"x8' Monarch
22"x10' Davis.
24"x12' Lodge & Shipley.
27"x12' Schumacher Boye.
42"x42' Putnam geared head.

HORIZONTAL MILLS

2½" Cleveland No. 1.
3" Defiance No. 8.
3½" Landis No. 35 floor type.
3" Binsee knee type.

VERTICAL MILLS

24" Bullard, side head.
30" Bullard single turret.
34" Colburn single turret.
42" Detrick & Harvey.
60" Gisholt.
100" Betts.

GRINDERS

Nos. 72—A-3 Heald Sizematic.
Nos. 60, 65, 70, 72 & 75 Heald.
26" No. 16 Blanchard surface.
30"x72" Springfield surface.
12"x24" Diamond surface.
Nos. 2 & 4 B. & S. universal.
30"x84" Diamond face
Landis 6"x18" to 16"x53".
Norton, 6"x32" to 14"x72".
18", 24" & 30" Gardner disc.
30" & 53" Besly disc.
16"x48" Landis crank.
10"x24" & 10"x50" Norton cam.

MILLERS, Plain

Nos. 1½, 2, 3B. and 4B Brown & S.
Nos. 1½ B & S. and 2A Milwaukee.
Nos. 2, 3 and 4 Cincinnati.
Nos. 2, 2½ and 4 LeBlond.
No. 3 Kempsmith.
No. 4 Hendey.
No. 4 Kempsmith Maximill.

MILLERS, Misc.

24" and 48" Cincinnati duplex.
24" and 48" Cincinnati automatic.
24" and 48" Newton rotary.
48" Ohio tilted offset.
48"x8' Beaman & Smith.
28", 37" & 42" Briggs.
No. 1 Davis & Thompson.
Nos. 1 & 2 Kent Owens hand.

MILLERS, Universal

No. 1½ Rockford.
No. 2 Hendey.
No. 2 Cincinnati
No. 3A Brown & Sharpe.
No. 3A hvy. Brown & Sharpe.

PLANERS

24"x24"x24" Cincinnati crank.
24"x24"x6' Liberty openside.
27"x27"x6' Smith silk.
30"x30"x12' Cleveland openside.
32"x32"x12' Niles.
36"x36"x8' Gray.
36"x36"x10' Cincinnati.
36"x36"x12' Gray.
36"x36"x16' Cleveland.
48"x36"x10' Liberty.

PRESSES

No. C4 Ferracute O. B. I.
No. 75 Toledo openback.
150 ton Ferracute Coining.
600 ton Cleveland Coining.
No. 5A Bliss toggle.
No. 168½ Toledo toggle.
No. 266 Consolidated cam drawing.
No. DDG54 Ferracute cam drawing
Nos. 56½ & 58 Toledo.
No. 74½ & 78½ Bliss.
Nos. 64 & 65 Consolidated.
P3, P4, PG4, PG5 Ferracute.
No. 25½ Consolidated horn.
No. 4A Bliss Stiles horn.

SHAPERS

16" Ohio.
16" Gould & Eberhardt.
16" Cincinnati.
24" Walcott.
24" Potter & Johnston.
24" Gould & Eberhardt.

MISCELLANEOUS

No. 454 New Britain automatic.
10" Bullard Continumatic.
Coulter diamond borer.
No. 3 Oilgear hydr. broach.
655' Union 2 stg. compressor.
21", 24", 28" Cincinnati drills.
4', 5', 8' Western radials.
No. 51 Nazel air hammer.
¾" & 2½" M. & M. keyseaters.
Wicaco oil groover.
10'x16ga. Bertach shear.
4'x¼" Toledo shear.
20" Betts slotter.
1½", 4", 5" Ajax upsetters.
100 KVA Gibb press welder.

2000 TOOLS IN STOCK. SEND FOR LIST.

MILES MACHINERY CO.

SAGINAW, MICHIGAN

MOTORS

Completely rebuilt, modernized and performance tested. REAL MONEY SAVING PRICES. Get full details and Low Prices from Moreco before you buy. All sizes—standard makes. We buy, sell, and exchange.

THE MOTOR REPAIR & MFG. CO.
1540 Hamilton Ave., Cleveland, O.

A Few Of Our 2,000 Machines

LATHES

1—72"x35' Bement Heavy Duty.
1—65"x32' Bement Hvy. Duty.
1—56"x18' Niles-B-Pond Hvy. Duty.
1—36"x26' Niles Bement Pond.
1—76"x52' Putnam Lathe.
1—30"x16' H-S-Gamble.
1—24"x30' Lodge & Shipley.
1—18"x8', 14"x8' Lodge-S., G. H.

BORING MILLS

1—24" Bullard New Era.
1—36" Bullard Rapid Production.
1—51" Bausch.
1—53" Niles B Pond Rapid Traverse.
1—60" Colburn Vertical.
1—42" Colburn Vertical.
1—62" Niles Vertical.
1—84" Bullard Vertical.
1—90" Betts Vertical.
1—96" Niles B Pond Rapid Traverse.
1—10-16' N.-B.-Pond Vertical.
1—10' Niles Vertical Boring Mill.

MILLERS

1—No. 3-S Cincinnati Plain.
1—No. 2-A Brown-Sharpe Universal.
1—No. 2 Kempsmith Universal.
1—No. 4-B Brown & Sharpe Plain.
2—No. 2 Cinci. Plain Rapid Traverse.
1—No. 4 Cincinnati Hi-Power Plain.
1—No. 5 Cincinnati Plain.
1—No. 5 Brown & S. plain miller.
1—No. 2 Van Norman Duplex.

RADIALS

1—5' Niles Right Line Radial.
1—5' Cincinnati-Bickford Plain.
1—6' Cincinnati-Bickford Pl., M. D.

DRILLS

1—No. 210 Barnes All Geared, B.B.
1—No. 2 Colburn four-spindle.
1—No. 4-D Colburn.
1—No. 1 Garvin Duplex Horizontal.
2—No. 12 P. & W. multiple spindle.
1—24-Spindle Bausch Heavy Duty.

PLANERS

1—42"x42"x20' Niles Planer.
1—48"x48"x10' Niles-Bement-Pond.
1—56"x56"x14' Niles-Bement-Pond.
1—56"x56"x14' Gray.
1—60"x60"x20' D. & H. Openside.
3—72"x72"x12' Pond.
1—36"x36"x12' Cincinnati 4 heads.
1—25' Niles Plate.

SHEARS

1—No. 2, Hilles-Jones Guillotine.

GRINDERS

1—No. 2 B. & S Universal Grinder.
1—No. 13 B. & S. Universal.
1—18"x"84 Landis Grinder.
1—20"x96" Norton Plain.
1—14"x72" Norton Plain.
1—10"x72" Norton Plain.

GEAR CUTTERS

1—72" Gear Cutter.
2—6", 11", 18" Gleasons.
1—36 B-M Gould-Eberhardt.
2—No. 5 Newark Hobbers.
1—100" G. and E. Hobber.
1—No. 4-36 Brown & S. gear cutter.
1—No. 5 Cincinnati Gear Cutter.
1—No. 6 Fellows Gear Shaper.

MISCELLANEOUS

1—90" Wheel Lathe.

Need some good tools? Let us quote you.

Simmons Machine Tool Corp.

ALBANY, N. Y. **149 Broadway, New York City**

BARGAINS with SAFETY

BORING MILLS, Horiz.
2½" Cleveland, Gear Box M. D.
2½" N. B. P. knee type.
3½" bar, Landis No. 35 floor type.
4" Gisholt knee type M. D.

BORING MILLS, Vertical
24" Bullard, New Era.
42" Bullard, Power Rapid Traverse.
48" Colburn, P. R. T., M. D.
60" Bullard, P. R. T., M. D.
72" Bullard, Self Cont.
72" Betts heavy duty.

DRILLS, Radial
4' and 6' Mueller, Gear Box (2).
5' Western m. d.
6' American universal.
6' American Triple Grd. Gear Box.

GRINDERS
No. 2 Fraser Univ. 10"x30".
10"x36" Landis Plain (3).
12"x36" Landis Plain.
No. 2 Landis Univ. 12"x36".
6"x32" Norton, self-contained.
15"x15"x72" Norton Planer type, sur.
16"x8" Heald Rotary Surface (2).
16"x48" Landis crankshaft.
No. 26—18" Besley Disc.
48" Badger face, Hyd. Feed.
No. 2 Diamond 36"x12"
Nos. 55 & 65 Heald Cylinder.
52" Besley Vert. Spin. Disc.
14" P & W Surface M. D.
No. 33 Abrasive Surface (2).

LATHES
7"x60" Fitchburg Low Swing.
11"x5' Seneca Falls, 14"x6' Sidney.
16"x6' Hendey; 16x6 Walcott.
18"x7' Lehmann Grd. Hd.
18"x8' S., B. & E. Cone T. A.
18"x8' Whitcomb-Blaisdell Cone.
18"x8' L & S Grd. Hd., M. D.
19"x10' Le Blond Cone.
20"x8' American Cone.
24"x12' American Cone.
24"x12' Putnam Q. C. G., Cone.
24"x19' American L. C. G.
26"x10' Boye & Emmes QCG Cone.
30"x12' S & B Cone, T. A.
36"x16' Bridgeford AC M. D.
36"x26' L & S cone Q. C. G.
No. 1 N. B. P. 42" Carwheel.
42"x20' Bridgeford Grd. Hd.
60"x30' Pittsburg Grd. Hd.
64"x18' Bement-Miles Cone.

MILLERS, Production
8"&12" Pratt & Whitney.
23" Cincinnati Semi Automatic
No. 7H Becker.

MILLERS, Vertical
Model CS Becker Continuous.
Model B Becker, feeds 36x14x15, spd.
No. 5B Becker, Cone.

MILLERS, Plain
No. 4G Le Blond Grd. Hd.
No. 3G Hendey Grd. Hd.
No. 2B Heavy. B. & S.

MILLERS, Universal
No. 2 Owen Cone.
No. 2 Brown & Sharpe Cone.
No. 2A B. & S., S. P. D.
No. 2RS Milwaukee Grd. Hd. M. D.

MILLERS, Planer Type
Ingersoll adj. rail, 36"x30"x12'.

PLANERS
84"x84"x18' N. B. P., M. D 4 hds.
72"x60"x18' D & H Openside.
48"x48"x10' D & H Openside.
48"x36x10' Cincinnati.
42"x36"x12' & 24"x6' Cinci. M.
30"x30"x10' D & H Openside.
17"x17"x4' Whitcomb M. D.

PRESSES
No. 58½ Toledo SS Grd.
400 ton Wood Hor. Hyd. Carwheel.
400 ton Southwark Hyd. Vert.
400 ton N. B. P. Hor. Hyd. Carwheel.

PUNCHES and SHEARS
54" H. & J. No. 2 double end.
156"x¼" Hyde Park.

ROLLS
17"x1¼" Niles A. C. m. d.
10"x¾" Bertsch, pyr.
8"x¾" Pyramid.

SAWS
48" Ryerson Friction M. D.
No. 2B Gorton Internal, 7½".
6" Peerless univ., shaping.
No. 16 Higley, cold, m. d.
No. 4B Cochrane & Bly.

TURRET LATHES
4L Gisholt—no cross slide carriage.
24" Gisholt Cone 5¾" H. S.
No. 4B Gisholt Univ. Grd. head.
26" Libby, 7½" spindle hole M. D.
26" Steinle 6¾" spindle hole M. D.
No. 4 Warner & Swasey, 1½".

MISCELLANEOUS
18" Gridley Automatic 4 Spindle.
24" Gridley Single Spin. M. D. Auto.
Nos. 23, 24 & 34 New Britain chkg.
Bolt Header, 2" Ajax.
Nos. 3B & 4 LaPointe Screw.
Flanger, 8" McCabe Pneu.
No. 13H B. & S. Gear Cutter.
11" Gleason Bevel Generator M. D.
Hammers, Nos. 5N & 2B Nazel.
200 lb. Bradley, Helve Hammer.
8" & 3" Jarecki Pipe Machine.
2" Bignall & Keeler Pipe Machine.
8" and 6" Saunders, Pipe Machine.
Press Brake, 12"x¾" Robinson.
Shaper, 7" Rhodes M. D.
24", 20", 16" Smith & Mills Cone.

Send for complete stock list

BENNETT-RAFKIN MACHINERY CO.

OFFICES: 30 CHURCH ST., NEW YORK CITY

5,000 Used, One-Piece Steel Tapered

TOTE PANS

21x14x5½. 16 gauge.
50c each while they last

PASSMAN BROS.

705 Washington Blvd. **Chicago, Ill.**

REBUILT ELECTRIC MOTORS and TRANSFORMERS

Big Savings in Prices

We have a stock of 10,000 rebuilt, tested motors in excellent condition Write to us today, asking for the kind of motor you need.

Our prices will save you at least 50%

ERIE ELECTRIC MOTOR REPAIR CO. INC.

117 CHURCH ST. **BUFFALO, N. Y.**

GUARANTEED USED MACHINERY

Air Compressor, 6x6 Curtis dbl. cyl.
Borer, cylinder, No. 5-D Moline, 6 sp.
Boring mills, 42" Colburn.
Burnishing mche., No. 1 Baird, dbl. ball.
Drill, No. 1½ Avey, 3 spindle.
Drill, No. D-3 Colburn, h.d., 3" cap. in steel.
Drill press, 4 spindle No. 2 Avey.
Drill, 3 spindle L. & G. power feed.
Grinder, No. 10 Besly double disc.
Grinder, No. 3 W. & M. surface.
Grinder, surface, No. 2 Reed.
Grinder, No. 2 abrasive surface.
Grinder, No. 33 abrasive surface, vert.
Hammer, 1200 lb. Bliss, board drop.
Lathe, turret, 2¼"x26" Cinc. Acme.
Lathe, No. 3A W. & S. Univ. turret.
Lathe, stub, 12" Sundstrand.
Miller, No. 2B K. & T. plain complete.
Miller, No. 2 Cincinnatih. p. univ. comp.
Miller, Ingersoll slab, 4 heads.
Miller, No. 1 Kempsmith.
Miller, No. 4 LeBlond plain, h. d.
Miller, No. 13-B B. & S.
Miller, No. 3 Garvin hand.
Planer, Cleveland 30x30x10' openside.
Planer 56"x56x12' Gray.
Planer, Cleveland 48x48x12' open s.
Press, No. 18 Bliss o. b. i.
Screw machine, No. 4 W. & S.
Shaper, 20" S. & M. single pulley, m.d.
Shaper, 20" American s. p. d.
Shaper, 16" s. p. d.
Shear, 11' Stoll 14 gauge, m. d.

All machines backed by Essley guarantee

THE E. L. ESSLEY MACHINERY CO.

831 REES ST., **CHICAGO, ILL.**

"BURNS BEST BARGAINS"

Band Saw, Klemm Metal No. 2.
Boring Bar, Barnes No. 1, dbl. spdle.
Boring Mill, Bullard 30" turret head.
Brakes, Dreis & Krump, Whitney-Jensen all sizes.
Comp., Ing-Rand 10'x8, tex-rope dr.
Comp., Bury 8x8 & 6x6 horiz.
Die Sinker, Pratt & Whitney No. 4, vert. dbl. sp. with cherrying attach.
Drill Press, Foote Burt No. 25, S.P.D.
Drill, Leland & Gifford 2-Sp. B. B.
Drill Radial American 5', motor-drive.
Drills, Radial, Bickford No. 3 — 6' full universal.
Drill, Colburn D-4 heavy duty, No. 5 taper, S. P. D.
Grinder, Besley No. 1 M. D.
Grinder, B. & S. No. 12, plain.
Grinder, B. & S. No. 3 univ.
Grinder, Landis int. hyd., 15x8 M.D.
Grinder, Gardner No. 2, No. 4, No.6 double disc.
Hobbers, Adam No. 1.
Lathes, Hendey 18x8, 16x6, t. a.
Lathe, McCabe dbl. sp. 26-48x14'.
Lathe, Harrington Gap type, closed 28" by 18' bed, gap open 52", takes 22' between centers.
Lathe, Pratt & Whitney 1x18 autom., magazine feed.
Miller, Knight Miller & Driller.
Miller, Kearney & T. No. 1-A, SPD
Miller, Becker No. 5-C vertical.
Miller, Pratt & Whitney No. 10 hand.
Press, Kling No. 2 sgl. end 19" throat.
Press, Rock. No. 23 horn, swing table.
Press, Bliss No. 22 F. W. T.
Press, Bliss No. 68 double action.
Press, Bliss No. 61 reducing str. 5" F.W.T.
Planer, Gray 30x30x8.
Turret Lathes, W & S No. 2-A & No. 3-A Univ. hollow hex for chucking.
Turret lathe, P. & J. No. 6-A.
Turret lathe, J. & L. double head.
Welders, Dyer all sizes (New).

SHEET METAL MACHINES

Press Brake, Ohl's 12', power, shaft diam. 4-½".
Shear, Niagara No. 696 power Sq. 15" gap, 8'-10 ga.
Shear, D. & K. 5' power, cap. 10-ga.
Shear, Niagara No. 230 power, cap. 16-ga.
Shear, Kidd No. 3 angle.
Shear, Quickwork No. 10-5' rotary 14-ga.
Shear, Yoder, rotary, cap. 14-ga.
Shear, Badger No. 27 splitting.
Shear, Pexto 30" foot power.
Shear, Kling No. 4 angle shear.
Shear, Rock River comb. punch & shear, cut 4" angles, 1½" sq., 1½" round.
Roll, Hendley - Whittemore 6' slip, diam. 5½", C. P.
Roll, Beloit slip 4', 3-½" rolls, hand.
Roll, 10' power, cap. ¼" clutch pulley.
Roll, Hilles & Jones smoothing 38" wide, Cap. 16-ga.
Rock River bending machine, ram 5x7.
Brake, Dreis & Krump 10' hand, cap. 14-ga.
Brake, Dreis & Krump 10' hand, cap. 16-ga.
Brake, Dreis & Krump hand, 8' cap. 14-ga.

F.W. BURNS MACHINERY CO.

1441 N. Third St., Milwaukee, Wis.

WAREHOUSE REMOVAL BRINGS OUT THESE SPECIALS

AMERICAN 22"x8' LATHE, QCG, Cone Dr. Taper Att.	$ 450
BECKER No. 6 VERTICAL MILLER, M. D.	750
CINCINNATI No. 1½ Univ. Tool & Cutter GRINDER	350
Cochrane-Bly No. 6 Cold SAW; 8½x8½ Cap. QCG, SPD.	450
Cochrane-Bly No. 11 SAW GRINDERS, (3) fine.	150
FELLOWS GEAR SHAPERS, No. 6, (2)	150
FELLOWS GEAR SHAPERS, No. 7, High Speed (2)	1950
LeBLOND 26"x10' Univ. Crankshaft Lathe; SPD	750
GORDON CAMSHAFT LATHE, SPD	450
SEYBOLD 84" 20th Century Power Paper Cutter,	1750
Nat. ACME, No. 56-2¼" 4 Spindle Automatic, M D.	750
BROWN & SHARPE No. 13B MFG. MILLER, SPD.	750
Brown & Sharpe No. 12 Mfg. Millers (2)	150
Taft-Pierce Auto. Thread Millers (2)	275
BOLEY Multiple Spindle Drill; like new; 13 Spdls.	650
Fox Multiple Drills; 10 Spdl. No. 1MT. (3)	250

These are only a few out of over 400 Machines to be moved within the next thirty days. Items too numerous to be listed Send US your INQUIRIES.

FALK MACHINERY & SUPPLY CO., INC.

new address 18 WARD ST. ROCHESTER, N. Y.

BORING MILLS

72" Colburn.
52" Gisholt.
48" Colburn.
60", 42" Bullard.
24"—36"—42" Bullard New Era Vertical Turret Lathes.
4½" Bar NBP. Duplex Control.
No. 0 Giddings & Lewis, 3⅛" bar.

MILLING MACHINES

Nos. 5, 4, 3, 2 Cincinnati, Plain.
No. 4 Cinc. Rectangular overarm.
No. 4 Cincinnati Vertical.
No. 15 Garvin Vertical.
No. 2 LeBlond Universal.
No. 1 Kempsmith Universal.

RADIAL DRILLS

8' Cincinnati-Bickford Enclosed Head, M. D.; 3½' Carlton, S. P. D.

LATHES

48"x17' Houston Stanwood & G.
36"x16' Fitchburg.
32"x17' Houston Stanwood & G.
20"x10' Reed-Prentice.
20"x10', 36"x12' Lodge & Shipley.
28"x18' American.

MISCELLANEOUS

Bolt Cutters, Landis 2" & 3" Double and Single Spindle.
Drill, No. D4 Colburn Heavy Duty.
Drill 36" and 42" Cincinnati-Bickford Tapping.
GearGenerators, 8" Gleason Spiral Bevel.
Grinders, (2), No. 16 Blanchard B. D. 26" chuck; also with direct m. d.
Grinders, No. 3 Bryant; No. 70 Heald Internal.
Planer, 60"x54"x16' Woodward & Powell, three heads.
Shear, No. 2 Hilles and Jones Gate, 28" gap, 74"x¼".
Turret Lathe, No. 3A Warney & Swasey Universal.
Turret lathe, No. 5 Foster Universal.
Turret Lathes, 7½"x26" Libby hollow spindle.
Turret Lathes, 6¼" hollow spindle x 24" Gisholt.

SUN MACHINERY COMPANY, INC.

115-121 Hanford St., NEWARK, N. J.

WRITE US—WE CAN LOCATE IT

Brake, 6', 3/16" cap. Power.
Broach, No. 3 Type XA Oilgear.
Drills, 1, 2, spdl., ball bearing Avey; 20", 25" & 28" Barnes b. g., p. f.; 24" Cin. s. h., b. g., tap att.
Gear Hobbers, No. 5A Lees Bradn.
Grinders, 26" Badger disc, ball bearing; No. 52 Greenfield Hydroil Internal; 10"x30" Landis, plain; No. 1 LeBlond Tool & Cutter.
Hacksaws, Nos. 1, 2 Marvel; 6x6, 9x9 Peerless.
No. 2 Kempsmith Maximiller; No. 3-B Hendey univ.; No. 35 Ohio, univ.; 24" Cin. auto.
Nibbler, No. 1 Campbell.
Pipe machine, 2" Landis, grd. hd., md.
Planer, 36"x10' G ay, 2 heads.
Punch presses, o. b. 1, No. 20 Bliss; No. 3½ Toledo.
Punch presses, Nos. 1 Bliss cam draw; No. 74½ Bliss S.S.; No. 93C Toledo dbl. crank; Nos. 4A & 16 Bliss Horning.

SPECIALS

10' CHGO. STEEL Press Brake, 3/16" cap. m.d.; No. 3A UNIVERSAL 3" Hor. Boring Mill, M. D.; 4 Sp. AVEYMATICS High Speed Drill Presses, P. F. (2); No. 2 Kempsmith Maximiller, S. P. D.

Keyseater, No. 2 Mitts & Merrill.
Lathes, 16"x10' Hendey, taper att., 16"x10' Seneca Falls, q.c.g.; 19"x8' LeBlond q. c. g. taper att. 20"x8' American q. c. g.; 16"x8' Monarch, q. c. g.; 20"x8' Monarch, q. c. g.; 20"x10 Prentice grd. head; 24"x12' S. & B. q. c. g. taper att.
Millers, No. 1A K. & T. dbl. overarm, s.p.d.; No. 2 Cincinnati plain; Punch & Shear, No. 53 Beliot.
Screw mchs., Nos. 4 and 6 W. & S.
Shapers, 14" to 28" G. & E., s. p. d. 7" Rhodes comb. with slotter.
Shears, 30" Bertsch corrugating; No. 05 Niagara ring & circle, m. d.
Welders, arc, 220 Amp. USL.
Welders, butt, 15 K. W. Toledo.
Welders, spot, 10 & 20 K. V. A. Taylor; 35 K.W. Toledo.

VICTOR MACHINERY CO., 130-132 S. Clinton St., CHICAGO, ILLINOIS

MISCELLANEOUS MACHINES

2—No. 12 LeBlond Multi-Cut Lathes with back face attachment.
2—16" Sundstrand Double Carriage Stub Lathes, m. d.
1—21" Gisholt Simplimatic, Hardened Ways, m. d.
1—24" Bullard Boring Mill with side head.
1—No. 4½0 W. F. & John Barnes Horizontal Hydraulic Double End Boring Machine, m. d.
1—Rockford Single End Hydraulic Boring Machine, 54" diameter table, 2 station type, M. D.
2—C-12 NATCO Multiple Drills 12x18 head.
1—No. 14 NATCO Drill 12x24 head.
1—No 60 NATCO 3-way Multiple Drill.
4—4' Hammond Type B Radial Drills with tapping attachment.
1—Model B No. 250H NATCO Hydraulic Vertical Driller.
1—7-spindle Foote-Burt No. 2 Gang Drill, adj. spindle.
1—Moline 16 spindle Vertical Guide Hole Driller.

WE CARRY A FULL STOCK OF USED MACHINE TOOLS

Your Inquiries Will Be Appreciated.

The Strong, Carlisle & Hammond Co.

1392 West Third St. CLEVELAND, OHIO

2832 East Grand Blvd. DETROIT, MICHIGAN

SCHATZ COMBINATION SHEARING AND PUNCHING MACHINE

CAPACITIES

SHEAR: . . . 1⅛" plate.
Angles-6x6x¾".
Tees-5½x½".
Rounds-2½".
Squares-2¼".
I Beams 12x12".
Channels-12x4".

PUNCH: . . . 1½" thru 1" material.
I Beams (web) 24x12".
Channels (web) 15x4".
I Beams (flange) 20x12".
Channels (flange) 15x4".

Weight (approximately), 25,000 lbs. Depth of Throat, 24".

CONDITION — EQUAL TO NEW

SAMPSON TOOL CO., INC. 101 Walker Street NEW YORK

— FINE TOOLS —

IMMEDIATE DELIVERY

Automatic, cone, 1", 4-spdl. cut-off.
Automatic, New Britain 1x5, 6 spdl.
Swager, No. 4 Torrington.
Press, No. 4 Niagara.
Press, No. 20 Bliss.
Wicaco oil groover.
Fisher oil groover.
Cincinnati 18" Mfg. mill.
Hammer, 5½-B High Speed.
Hack saw, 6x6.
Hand mills, Whitney and Bristol.
Drill, Fosdick, large table.
Grant No. 3 double end driller.
B. & S. grinder, No. 12.
Mill, B. & S. No. 12.
Foster No. 8 screw machine.

Bradley Machinery Co. 529 E. Jefferson Ave. DETROIT, MICH.

AUTOMATICS FOR IMMEDIATE DELIVERY

Cleveland 4½" Model "M" 4-Spindle Chucking Machine, M. D. by 10 H. P. 3-60-220.
Cleveland 4-Spindle 1½" Chucking Machine, M. D.
National-Acme No. 56 2¼" 4-Spindle.
Gridley 4-Spindle 4½" Automatic Chucking Machine, Model "H", M.D.
1⅜" Gridley 4-Spindle, Model "F".
2¼" Gridley Single Spindle, M. D.
Nos. 6A & 5A Potter & Johnston's.
14" Fay Automatics with back angle attachment.

Many other high grade machines.

Industrial Mchy. Co., 2100-2300 Fletcher Ave., Indianapolis, Ind.

Exceptional Values

No. 4 LeBlond Heavy Duty Plain Miller, S. P. D.
No. 3 LeBlond Plain Miller, cone drive.
16", 20" and 24" G. & E. Shapers, gear box, S. P. D.
20" Stockbridge Shaper, cone drive.
27"x10' American, G. H., M. D.
18"x8' Reed Prentice Geared Head Lathe, S. P. D.
No. 11 B. & S. Plain Grinder, overhead M. D.
No. 3 B. & S. Universal Grinder, overhead belt drive.
6' American Plain Radial Drill M. D. on arm.
4½' Morris Radial—S. P. belt drive through gear box.
Send us your inquiries.

Iroquois Machinery Co., 660 Ohio Street, BUFFALO, N. Y.

WANTED

Highest Prices Paid for Your Surplus

USED MACHINERY

Turn Your Idle Equipment into Cash

Phone, Wire or Write

Regarding anything you have for sale

Immediate Action

We have a fine stock of used machinery—send us your inquiries.

Buyers of single machines or complete plants

INLAND MACHINERY CO.

40 S. Clinton St., ***Phone Randolph 4720*** **Chicago**

JUST RELEASED—GOOD AS NEW

BROWN & SHARPE AUTOMATICS:
5—No. 00 HI-SPEED, Full Auto. ROD MAGAZINES, Ser. No. 10900.
8—No. 00 REGULAR, full auto., Serial No. 9200.
1—No. 00 HIGH - SPEED THREADER, Ser. No. 10600.
2—No. 00 HI - SPEED, Turret Formers, Ser. No. 10000.
9—No. 0 HI-SPEED, Full Auto. Rod Magazines, Ser. No. 7100.
10—No. 0 REGULAR, Full Auto., Ser. 5900.
6—No. 0 HI - SPEED, Turret Formers, ROD MAGAZINES, Ser. No. 7000.
4—No. 0 HI - SPEED, Turret Formers, Ser. No. 6000.
2—No. 0 REGULAR, Turret Formers, Ser. No. 6000.
6—No. 2 & 2G REGULAR—Full Auto.

HENDEY LATHES:
12"x5—12"x6' — 14"x6'—18"x8', Ser. Nos. 27000.
Pan Bed, Taper Attach.—Draw-Bar, Collets, Fitted Chucks.

MILWAUKEE MILLERS; (K. & T.)
(2) No. 1 Plain.
(1) No. 2 Special Plain, Vertical & Slotting Attach.
(4) No. 1 & 1B Vertical Millers.

SHAPERS:
16" American Heavy Pattern, s. p. d.
16" Cincinnati, Heavy Duty, s. p. d.
24" Cincinnati, Heavy Duty, s. p. d.

GRINDERS;
6—No. 10 B. & S., Plain, S. P. D.
3—No. 11 B. & S., Plain, S. P. D.
1—No. 2 B. & S. UNIVERSAL.
3—No. 3 & 33 ABRASIVE, Mag. Chucks.

HAND SCREW MACHINES:
Nos. 0-1-2—B. & S. WIRE FEED.

PRESSES;
125—Nos. 5, 4, 2 & 1 L. & J. o.b.i.

Machinery Dealers Incorporated

419 CHAPEL ST., NEW HAVEN, CONN.

DREIS & KRUMP ALL STEEL POWER BRAKE 10'x3/16"—Motor Driven.
MONARCH ENGINE LATHE 24"x20' Quick Change, Taper Attachment.
GOULD & EBERHARDT CRANK SHAPER—28" Cone Driven.
BROWN & SHARPE GEAR CUTTER No. 5—60".
BARBER COLMAN GEAR HOBBERS NO. 3 & 12.
WARNER & SWASEY TURRET LATHE No. 4 PLAIN AND UNIVERSAL.
DIAMOND SURFACE GRINDER 16x50 Belt Driven.

Indianapolis Machinery & Supply Co., Inc.
1960-70 South Meridian St., Indianapolis, Indiana

Here's a Good Sales Tip

There is no more economical way of calling on all the metal-working plants of the country than by using a page in this publication regularly to keep your name, your products and your service constantly before those who buy your goods.

The readers of these pages have a tremendous purchasing power. Make your business known to them if you have reliable products to sell.

Hitchcock Publishing Co.
508 S. Dearborn St., Chicago, Ill.

High Speed Ball Bearing Drills

1—4 Spindle L-G; No. 3 M. T. Power Feeds to Each Spindle; 12" Overhang.
1—4 Spindle L-G; No. 2 M. T. Power Feeds to Each Spindle; 10" Overhang.
2—each—3 and 4 Spindle Aveymatics, No. 2.
1—No. 2 Avey, 12" Overhang; Arr. For M. D.
1—20" Leland-Gifford, Power Feed, No. 2 M. T.

Automatic, 2" Cleveland "B".
Bolt cutter, 2" Landis, lead screw.
Broach, No. 3XA Oilgear hyd.
Die filer, No. 5 Thiel, m. d.
Die filer, No. 5 Rearwin, motor drive.
Drill, 5' Dreses, univ. radial arr. m. d.
Drill, No. 13 Natco, 8 spindles.
Drill, No. 23 Foote Burt, 1½" cap.
Drill, 26" Barnes sldg. hd. tap. att.
Drill, 3½' American Radial S. P. D.
Gear hobber, No. 3 Barber Colman.
Grinder, No. 60 Heald internal.
Grinder, No. 1 B. & S. universal.
Grinder, No. 2 Brown & S. surface.
Grinder, No. 2 Reid sur., arr. m. d.
Grinders, No. 200 Heald rot. surf.
Grinders, No. 2 & 3 B. & S. cutter.
Grinder, No. 2 Oakley univ. T. & C.
Lathe, 12"x5' Hendey, q. c. g.
Lathe, 14"x6' Rockford, q. c. g.
Lathe, 15"x6' C. & J., q. c. g., new.
Lathe, 14"x8' Rockford q. c. g.
Lathe, 24"x12' S. & B.; q. c. g.
Miller, No. 1A K. & T.; dble. o. a.
Miller, No. 2B K. & T. sgle. o. a.
Miller, No. 2½B K. & T. vertical.
Miller, No. 2 Kemp. maximiller.
Miller, 1-M Cincinnati vertical.
Miller, No. 1 B. & S. vertical.
Miller, No. 3 Becker Brainard plain.
Miller, No. 4 Cinncinati plain.
Miller, 2½ Rockford universal.
Miller, No. 6 Whitney, h. d., m. d.
Planer, 30x30x7 Gray, 1 head.
Press, No. 4A Bliss horn; adj. tbl.
Press, No. 7½ Bliss, grd; tie rod.
Presses, Nos. 1 & 1½ Blisscam grd.
Presses, Nos. 3 & 4 Rock; o. b. l.
Saw, No. 8 Marvel band, M. D.
Saws, 6"x6" Peerless, universal.
Saw, No. 6 Marvel high speed.
Saw, No. 1 & 2 Marvel hack.
Saw, 6"x6" Peerless high speed.
Scleroscopes, "C" & "D" Shore.
Shapers, 24" Cinncinnati.
Shaper, 24" Stock. & American, m. d.
Tapper, No. 2X Garvin, timken brg.
Welder, 150 amp. Wilson port. arc.

200 Ton Ferracute Toggle Press
10' 6"x¼" Ohl Pwr. Press Brake, m. d.

GEO. M. BERNSTEIN & CO.

12 So. Clinton St., Chicago, Illinois

LOOKING FOR TOOLS?

Consult The Classified Finding Index

A BUYERS GUIDE!

HIGH GRADE MACHINES

Item No. 181—Machine No. 1—Charles H. Besley & Co. double disc grinder—20" double end motor driven wet disc grinder.
Item No. 182—Machine No. 2—No. 75 Heald Grinder.
Item No. 184—No. 4—No. 1 Bristol hand miller arranged with special crank power feed to table, equipped with motor drive and coolant pump and tank.
Item No. 185—No. 5—No. 10 Brown & Sharp Grinder, starter and cog belts.
Item No. 186—No. 20 8" Heald Rotary Surface Grinder with pump, tank and 2 magnetic chucks & new belts. Motor Starter &Cog-Belts
Item No. 187—Capitol Internal Grinder.
Item No. 188—No. 100 New Yankee drill grinder.

FOUNDRY FOR SALE

In Indianapolis. Excellent condition, fully equipped for gray iron. 15,000 tons annual capacity, two 6 ft. cupolas with mechanical chargers, large core room and various departments, equipped to do a profitable business on a highly competitive basis by railroad, interurban, or truck. Excellent labor market. Centrally located.

FRANK M. DELL
INDIANAPOLIS, IND.

Surplus Foundry Equipment and Supplies for Sale at Saving Prices.

WRITE FOR LIST.

Some Really Nice Machinery and Equipment

No. 185 Toledo toggle drawing press, 18" diameter shaft, bed 72" square. Weight 450,000 lbs.
No. 181S Toledo toggle drawing press, 14" shaft, 42" stroke, 12"x72" Landis Self Contained Grinder.
No. 3H LeBlond heavy plain miller, with vertical attachment.
No. 2B B. & S. Plain Miller, single pulley drive.
No. 6 Becker vertical miller, 60" feed.
50 lb. Standard Automatic Drop Hammer.
6"x32" Norton plain grinders, very good (2).
14"x72" Norton plain grinder, very good.
No. 4 Quint turret drill.
No. 2 and 4 Milholland screw machines, with lot of collets.
24"x15' American Tool Works Double B.G.Q.C. Lathe.
No. 2 Mitts and Merrill keyseater with bars, posts etc.
Size B Jarecki Die makers screw press.
42" Allaround bench folder and brake.
Several Cleveland automatics, from 3/8" bar and up — one 2" Model A double cross slides.

A. D. White Machinery Co., 108 N. Jefferson St., CHICAGO, ILL.

SPECIAL OFFERING FOR JUNE

96" Pond Boring Mill, two heads.
42"x42"x12' Cincinnati four head planer.
3A Universal Horiz. Boring Mill, 3" bar.
Cleveland Horiz. Boring Mill, 2½" bar.
No. 2 Brown & Sharpe Univ. Grinder, complete.
No. 3B Milwaukee Univ. Miller, double arm, comp.
24" Gould & Eberhardt Shaper, cone drive, b. g.
300 lb. Standard Automatic Drop Hammer.
9/16" five spindle Davenport Screw Machine, rebuilt.
Niagara Shear, 48"x¼", gap type.
57T and 58T Niagara Trimming Presses.
3A Brown & Sharpe Univ. Miller.
800 lb. Standard Automatic Drop Hammer.
16A Blanchard Vert. Motor Driven grinder.
2—1 Brown & Sharpe Univ. Grinder, complete.
800 lb. Bliss Coining Press—No. 26K.

Write for further particulars.

J. L. LUCAS & SON, INC.

3 FOX ST. - - BRIDGEPORT, CONN.

GOOD USED MACHINES

BORING MILLS

51" Niles, 42" N-B-P., 2 hds.
42" Gisholt, Turret Head.
2½" Lucas, 4" Fosdick horiz.

LATHES

14"x6' Bradford, relieving attach.
16"x8' Monarch, Q. C.
24"x12' New Haven, Q. C.
26"x14' Putnam, Q. C.
40"x18' Prentice, raised to 52½".

PRESSES

Nos. 074 and 62 Consolidated.
8' Robinson, No. 164 Toledo toggle.
No. 5 Toledo grd., No. 723 Toledo.
No. 6 Niagara, O. B. I.
No. 175-A Consolidated Str. Side.

SHAPERS AND GEAR CUTTERS

16" Milwaukee, cone drive.
26" Smith & Mills, friction drive.
No. 6—60" B. & S. Gear Cutter.
Bilton gear cutter.
15" Potter & Johnston, tool room.

MILLING MACHINES

Nos. 3B, 5B B. & S. plain.
No. 34 Oesterlein, No. 1½ Am., pl.
No. 1 Milwaukee, single pulley.

TURRET LATHES

Nos. 2-A & 3-A W. & S. Hi.-Hd.
6¼" Gisholt, motor driven.
2" Warner & Swasey.

METAL WORKING MACHINERY

12"x15" Racine H. S. Saw.
11"x14" Worthington Air Compressor with motor.
2½" Landis Bolt Cutter, lead scr.
3" Acme Bolt Cutter, Landis hd.
24"x6' Gray Planer.
48"x10' Belmer Planer, 4 heads.
4' Mueller, 6' American radial, s.p.

GRINDERS

Thompson Universal.
Webster & Perks 10"x24" cyl.
Churchill vertical spindle.
No. 2 Cincinnati Plain.

The Norton-Broadway Machinery Co.

610 Baymiller St., Cincinnati, Ohio

2" Greenfield Bolt Cutter.
1½" Greenfield Bolt Cutter.
1" Landis Bolt Cutter.
36" Bullard Boring Mill.
3' Dreses Radial Drill.
4' Dreses Radial Drill.
5' Dreses Radial Drill.
6' American Radial Drill.
24"x10' Lodge & Shipley Lathe.
21"x8' LeBlond Lathe.
20"x10' Hendey Lathe.
16"x8' LeBlond Lathe.
14"x6' LeBlond Lathe.

DELTA EQUIPMENT CO.

148 N. 3rd St. Philadelphia, Pa.

Boring Mills — Vertical
10' Niles, 2 swivel heads.
62" Bullard, Standard, m. d.
60" Bullard, Rapid Traverse, M.D.
42" Bullard, New Era, M. D.

Boring Mills—Horizontal
60" Bar, NBP, Motor Drive.
36" Bar, Landis, No. 35, Motor Dr.

Grinders and Millers
14"x72" Norton, Plain, M. D.
Model CS Becker, Continuous, Vert.

Lathes
66"x30' Johnson, cone dr., hvy. duty.
60"x30' Pittsburgh, Motor Drive.
28"x12' Chard, motor drive.

Planers
120"x96"x26' D & H. Openside.
72"x60"x18' D & H, Openside.
36"x36"x20' Chandler, 4 hds. C. Sp.
36"x36"x18' Sellers, Rev. M D., 4 Hds

Slotter
24" NBP Crank Slotter, M. D.

Priced Low — Partial Listing — Send Your Inquiries

ROSENKRANZ, WEISBECKER & COMPANY, INC.
2309-A Singer Building, New York City, N. Y.

200amp. Hobart Bat. Charg. 7.5v. 1750
36" Crescent Band Saw. ½" saw.
2000 lb. B. & S. Brd. Drop Hammer.
5000 lb. dbl. frame N. B. P. Steam ham.
1100 lb. sgl. frame Steam Forg. Hammer
10'x¼" D. & K. Leaf Brake, b. d.
26"x11' Wickes D. B. G. Hvy. Duty
12"x10" Chi-Pneu. M.D. Air Comp.
10'x1" Wickes Bend. Rolls Pyr. Type.
8x8x1" H. & I. Angle Sh. on turntbl.
10'x⅜" Niagara Sq. Shear, m. d.
6" Merrell Cutting & Thread. Mch.
Lennox Rotary Bevel Shear, ¾" cap.
84" Niles Vertical Mill, B. D.
30" Bullard Mill, Turret Head.
48x1" L. & A. Pl Sh. on turntble. m.d.
300 amp. Lin. Port. DC Arc Welder.
Lewis Alligator Shear, cap. 1¼".
10ton Hand pwr. trav. Crane 46'8" span.
H&J S.E. Punch 62" Th. cap. 1½x1½"
4" Merrell Pipe Cutting & Thread Mch.
20"x10' Hendey Lathe dbl. friction CS.
No 3 B. & S. Automatic Gear Cutter.
3½" Ajax iron bed Forg. & Upset Mch.
72" Bullard Vert. Bor. Mill D.C.M.D.
20" American back-geared Shaper.

Russell Machine Co., 438 Oliver Bldg., Pittsburgh, Pa.

Air Compressors, 4 to 1200 cubic feet.
Beaders, 12" Pexto & 15" Yoder.
Drills, 1, 2, 3 & 4-spindle ball bearing.
Gear Hobber, No. 5-A Lees-Bradner.
Grinders, No. 60 Heald Int; No. 52 Hydro-Greenfield, Internal,
Lathes, 14x6 & 16x6, Hendey, Cinc., Adv. q. c., 16x8, 20x8 Monarch, LeBlond q. c. g., taper attachment, 20x10 Prentice, G.H.; Q.C.; T.A. 21"x8' LeBlond H. D., Q. Ch. G.
Millers, No. 1½ Valley City Univ. D.H. No. 35 Ohio Universal Equipment. No. 3 Brown & Sharpe Plain. No. 3B Hendy Univ. Div. Hd. Eqpt.
Nibbler, No. 1 Campbell 6" Throat.
Pipe Threader, 2" Landis G H., M.D.
Planer, 36x36x10' Gray 2 heads.
Punch & Shear, No. 52 Beliot, Comb.
Punch Presses, No. 16 Bliss Horn. No. 3 Walsh O. B. I. (2).
Screw Mchs., No. 4 W. & S. g.f.h.
Shapers, 16, 24, 28" Mil. & G. & E.
Welders, 15 & 30 K. W. Butt.

SEGAL MACHINERY CO., 117 Clinton Street, Chicago, Illinois

IMMEDIATE DELIVERY

10 and 15 h. p. Electric Motors. 50 K. W. Motor Generators.

60—15 H. P. Allis Chalmers Squirrel Cage Motors, frame 216C, 1150 R. P. M. 3 phase 60 cycle 220 or 440 volts.

20—10 h. p. Allis-Chalmers Squirrel Cage Motors, 3 phase. 60 cycle 220 or 440 volts, 1750 R. P. M.

Bought New 1935—Used Less Than 1 Year

2—50 K. W. Westinghouse 230 Volt Direct Current Motor Generators, 4 Bearing, factory built with across-the-line type Motors 3-phase 60 cycle 220 or 440 Volt. Motor with push button Magnetic Starters and Generator Panels. Generators, Compound Interpole.

"MOTORLAND"

1 YEAR GUARANTEE

L. J. LAND

145 GRAND ST., *Est. 1910* **NEW YORK, N. Y.**

NEW YORK CITY'S LARGEST STOCK

LOOK OVER THIS LIST

BRAKES—SHEARS & ROLLS
66" Ohl. Press Brake 12" gap.
96" Chicago 3/16 Power Finger brk.
72" Power Sq. Shear 14 ga.
96"x¼" Niles Plate Bending Rolls.

GRINDERS
Diamond surface 16"x48" table.
Double disc grinders—all sizes.

LATHES
14"x6' Rockford q. c. Tool Room.
14"x 6' Lodge & Shipley q. c.
16"x8' Monarch geared head m. d.
18"x10' L. & S. sel. grd. head, (3).
26"x12' Bridgeford, q. c.
30"x14' Niles S. B. Grd. Cone.
30"x20' Niles S. B. Grd. Cone.
36"x14' American triple geared.
32"x12' Boye & E., cone head q. c.
36"x36' LeBlond q. c. motor drive.

PRESSES
No. 4 & 5 Consolidated inclinable.
No. 21 & 21½ Bliss Inclinable.

WELDERS
20 k. w. National spot, 36" arms.
10 and 12 k. w. Federal, Jr.

PLANERS AND SHAPERS
32" Cincinnati Shaper.
20" Cincinnati Shaper Cone Drive.
36"x12' Gray Planer 2 Heads.
36"x14' American Planer 2 Heads.
60"x14' Gray 2 Heads.

MILLING MACHINES
No 3 Kemp. univ. 3 step cone, d.b.g.
No. 34 Oesterlein plain, cone drive.
No. 2 Brown & Sharpe, universal.
No. 4 LeBlond plain 3 step cone.

MISCELLANEOUS
Boring Mill, 60" vertical 4 spindle Barnes Camel back drill.
Bolt cutter, 1½" & 2" Acme.
Gear cutters, Nos. 3, 4 B. & S.
Hack saws, 12x15 Racine.
No. 1 Leblond Tool & Cutter Grnd.
Radial, 4' Hammond, sensitive.
Radial 6' Dresses, s. p. drive.
Straightening rolls, 54" H. & J.
16"x66" Landis Plain Grinder.

Jones—Buys, Sells and Trades—Send for Stock List

The Jones Machine Tool Co.

Front & Pike Sts., Cincinnati, Ohio

3000 15/16" HIGH SPEED TAPER SHANK DRILLS

Also thousands of 25/32, 57/64 and 27/32 drills.

Machine parts too numerous to mention. Gridley parts and pads, high speed drills and reamers, lathe dogs, centers, collets, sleeves, gears, milling cutters and screw machine tool holders and bushings.

When in Detroit call at store. You save money here.

Frank K. Moorhouse 575 E. JEFFERSON DETROIT, MICH.

EXCEPTIONAL VALUES

Radial Drill, American 5', triple geared, with table, S. P. D.
Lathe, 18x8 Monarch, geared head, motor driven.
Miller, No. 5 Brown & Sharpe.
Shaper, 26" Smith & Mills, geared.
Shaper, 16" Gould & Eberhardt, geared.
Turret Lathe, Warner & Swasey No. 6.
Punch Presses, Drill Presses, Air Compressors, Belting, and Motors.

Midwest Equipment Co.

628-30 W. Lake St., Chicago, Ill.

PRICED RIGHT FOR QUICK SALE

35-ton Type "PR" Oil Gear Hydraulic Straightening Press with "W" Pump, 8" stroke, 6¾" ram dia., 9" depth of throat.

Send for our LIST NO. 65 covering STOCK of Foundry & Industrial Equipment.

Scully-Jones & Co., 1905 S. Rockwell St., CHICAGO, ILLINOIS

HIGH GRADE MODERN MACHINES

16", 24", 32" G. & E. Shapers, m. d.
24" American Shapers, s.p.d.
3A Univ. Horiz. Boring Mill 3"bar.
18" 24" Cinci. Duplex Millers.
No.3 Cinn. h p. Plain Miller, s.p.d.
No. 3 Lees Bradner Thread Miller.
4½x12 Pratt&Whitney Thread Miller.
13-B Brown & Sharpe Miller s. p. d.
12" Cinci. b. g. Mfg. Type Miller.
3' Cinci. Bickford Radial Drill m.d.
Model M 1½ Clev. Auto. 4 spdl. m.d.
No. 2, 4, 6 W.&S. Grd Friction Hd.
1x5 New Britain 6 spdl. Auto.

GRINDERS:
10x24 & 6x32 Norton Ext. m. d.
3-No. 70 Heald Int.
16x52 Landis Ext. arr. for m. d.
No. 3 B. & S. Univ. Ex.

PRESSES
20 ton General flex. power press.
164 Cons. 5" stroke.
33P Toledo Geared.

A large stock of good tools—your inquiries solicited.

C. C. HOWARTH MACHINERY CO.

1440-44 Franklin Street **Detroit, Michigan**

MOTORS—GENERATORS

Rebuilt—Guaranteed

D. C. Motors & Generators
Large complete stock 115 & 230 volt.

A. C. MOTORS
1—750 HP, C. Whl. Syn. 600 RPM.
1—500 HP, E. Mch. Syn. 514 RPM.
2—300 HP, G. E. sq. cg. 360 RPM.
1—200 HP, F. M. s. rng. 1200 RPM.
1—200 HP, Brk. s. rng. 900 RPM.
1—150 HP, G. E. sl. rng. 1200 RPM.
1—150 HP, Al. Ch. sq. cg. 1200 RPM.
1—100 HP, Wagner sq. cg. 1200 RPM.
(Many additional, down to 1/20 HP.)

PLATERS
1—4000 amp 6/12 v Burke.
1—3500 amp. 6/12 v Bogue.
1—3000 amp. 6/12 v H. V. W.
1—1350 amp. Rochester 6 volt.
1—500 amp. Ben.-O'Con. 6 v.
(Many smaller units)

ENG. GENERATORS
1—225 KVA and 1—150 KVA, stm.
2—1250 KVA Diesel sets comp.

Partial Listings

TRANSFORMERS
2—100 KVA Mal. 12M-460 v.
4—50 Pittsb., 2200-220/440 v.
3—25 Pittsb. 2200-115/230 v.
2—54 KVA Kuhl. 440-110/220 dry.

M—G SETS
All cap., 720 KW down.

Frequency Changers
1—90 K.W. 60/120 cy.

TURBO GENERATORS
2—1250 KW condensing.
1—750 KW condensing.

A. C. GENERATORS
1—750 KVA. C. Wh. 600 RPM.
1—500 KVA. E. Mch. 514 RPM.
1—375 KVA. G. E. 225 RPM.
1—200 KVA. A Ch. 720 RPM.
(many smaller machines)

WELDERS
1—1000 amp. G. E.
1—500 amp. West. New.
1—300 & 1—200 amp. Lincoln.

Write for NEW FREE CATALOG containing thousands of Electrical Machinery Items—Motors, Welders, Platers, Compressors, Pumps, Turbines, etc.

Chicago Electric Co., 1340 W. 22nd St., Chicago

HARVEY GOLDMAN & CO.
Machinery
10567 Gratiot Ave., Detroit, Mich.

Automatics, Cone 1¼", M. D.
Automatics, 4" Cleve., Model M.
Broach, Amer., 12 ton, hyd., vert.
Drills, 21 & 24" Cincinnati-B. (28).
Grinders, No. 84 Gardner, double disc, opposed type auto. fd., m.d. (2)
Grinder, No. 7½ Gardner disc. m d.
Grinders, No. 70 Heald Internal (2)
Grinders, No. 72 Heald, M. D. Hyd Feed (3)
Grinder, No. 3 Abrasive Surface.
Grinder, No. 33 Abrasive surface.
Grinder, No. 13 B. & S. univ. (3).
Grinder, Heim Centerless, m. d.
Hammers, No. 3 Hi-Spd., m.d. (2)
Hobber, No. 16 G. & E., S. P. D.
Lathe, 16"x6' Hendey, g. h., s. p. d.
Lathe, 18"x8' Hendey, B. M. D.
Lathe, Turret, No. 6 W. & S. univ.
Mill, 2½" Cleveland Horiz. Boring.
Mill, No. 1 Kempsmith, vertical att.
Mill, No. 3 GH Hendey Univ., s p.d.
Planer, 30"x30"x10', Liberty open side, motor drive, 2 heads.
Planer, 16"x36"x14' Liberty Motor Drive, 3 heads, Double Housing.
Press, No. 14 Tol. horning gd., m. d.
Press, No. 66 Bliss, S. S., Tie Rod.
Press, No DG53 Ferracute S.S. (3)
Presses, P-2, P-3, Ferr., m. d.
Press, 50 ton Henry & Wright, m.d.
Shear, 10', ¼" United Eng'g, m. d.
Shear, 10', ⅜" Pittsburgh, m. d.
Shear, No. 736 Nia., 36", 3/16" cap.
Slotters, Betts, 16" motor drive.

JUNE 1st

We will be established in our new and larger quarters with a complete stock of fine machine tools

at

618-620 West Lake St., - - - Chicago, Ill.

A representative value: 42"x36"x12' Gray Planer, 4 heads; 2 side heads, 2 rail heads; belt dr.; excellent condition.

Send for quotation

SURPLUS STOCK & MACHINERY CO., 618 W. LAKE ST., CHICAGO, ILL.

— FOR IMMEDIATE SHIPMENT —

No. 306 Bliss S.C. tierod frame.
No. 40 Bliss horning press.
No. 12½ Toledo horning press.
No. 92½ Toledo D.C. tierod frame.
No. 3½-C Bliss toggle draw press.
No. 201½ V&O thread roller & trim.
No. 4 Niagara power dbl. seamer.
Nos. 1 & 2 Loshbough Jordan OBI.
No. 1 Sidney open back inclinable.
Artos Stripping off Mchs. for wire.
42" Rotary Board cutter.
No. 16 Bliss Horning Press.
36x36x8 Sellers Planer.
30" Bullard Vertical boring mill.
Model D Becker Vert. milling mch.
50 lb. Automatic drop hammer.
60" Quickwork rotary shear.
No. 248 Pexto lever shear.
No. 1 Baird tumbling barrel.
8" Marsh stencil machine.
No. 11 Yates-Amer. gang ripsaw.
13" & 22" Fox hand mitre trimmer.
No. 18-B Hi-Speed rivet hammer.
No. 80, 81 & 120 Grant rivet spinner.
42", 52" and 62" foot shears.
42" Pexto Power grooving machine.

J. N. MOYER 469 North Fifth St., **PHILADELPHIA, PA.**

THESE MACHINES FOR IMMEDIATE DELIVERY

1—Cincinnati 36" Duplex Mill, single pulley drive.
1—No. 6B and 6C Manvill Straight sided geared Presses.
1—No. 6 Waterbury Open Back Punch Press. 9" stroke.
1—¾" Gridley Automatic Screw Machine.
2—Norton Motor Drive Lapping Machines.
1—No. 66½ Consolidated Straight Sided Punch Press.
1—No. 1 Bliss Double Action S.S. Geared Punch Press.

Over 1000 tools on our floors. ***Let us have your Inquiries.***

LAKE MACHINERY CO., INC.
654 W. LAKE ST., CHICAGO, ILL.

R. A. VINE'S MACHINERY WAREHOUSE

GRINDERS: Bath Univ. Cyl.
10x24" Landis Plain Cyl.
6"x32" Norton Plain Cyl.
No. 12 Bryant, m. d., cheap.

LATHES: 24"x11' Cisco, Hy-D.
18"x8' Prentice.
20"x14' 6" American.
14"x5' South Bend.
14"x6' Springfield.
18"x8' Monarch.

TURRET LATHES:
No. 5 Foster univ., late, bar equip.
No. 2-4-6 Warner & S. plain.
No. 6 W. & S. univ., bar equip.

MILLS:
3B Milwaukee, pl., vert. & div. hd.
No. 5 Becker vert., pow. fd. to hd.

MISCELLANEOUS:
No. 2-B Nazel Hammer, inc. motor.
70 Ton O. B. I. Dbl. Crank Press.
15&30 ton Lucas Forcing Presses.

652 West Willis Ave., Detroit, Michigan

QUALITY MERCHANDISE

BORING MILLS

5" Detrich & H. floor type, M. D.
4" Fosdick floor type.

LATHES

14"x6' Reed Prentice grd. head q.c.g.
Timken br.mtr. in base coll.taper att.
16"x8' Lodge & Shipley, grd. head.
16"x8' Bradford, q.c.g.; taper att.
16"x8' Seneca Falls; q.c.g.
16"x8' Bradford, quick change grs.
16"x8' LeBlond q. c. g. chucks.
18"x8' Boye & E., quick change gear.
18"x8' Lodge & Shipley, q. c. g.
18"x10' Boye & E. q.c.g.; taper att.
18"x10' Bradford, quick changegrs.
28"x12' Boye & E. q.c.g.; taper att.
Hardinge, Rivett, Stark & Elgin bench.

DRILL PRESSES

24" Snyder back grd. power feed.
No. 2 Avey, 14½" overhang.
4 spindle Allen, ball bearing.
3 spindle Allen, B.B., power feed.
No. 2 Avey, tapping attachment.

MILLING MACHINES

No. 3A B. & S. Univ., m. d. Comp.
No. 3S Cincinnati univ.SPD,complete
No. 3 Cincinnati plain.
No. 2 Kempsmith plain.
No. 1½ Cinn. universal complete.
No. 2½B Milwaukee vertical.
No. 4B Becker, Vertical.
Pratt & Whitney bench.

SHAPERS

16" Rockford back geared.
17" Smith & Mills, back geared.
20" Ohio back geared.

SCREW MACHINES

Davenport automatics, m. d.
Nos. 2 & 4 W. & S. hand.
No. 2 B. & S. hand.

MISCELLANEOUS

300 Ampere Lin. port. arc welder.
24" Automatic shaper planer.
Covel head feed surface grinder, m.d.
Rhodes Slotter, 3½" stroke.
Bolt Cutter, 3" Acme sgle. head.

CLINTON MACHINERY CO.

33 So. Clinton St., CHICAGO, ILL.

NEW 3 Phase Motors 1 to 20 H. P., 5 H. P.------$55.75

LATHES

12"x6' Monarch, quick change.
16"x8' Hamilton, quick change.
18"x8'; 21"x10' South Bend, new.
20"x10' Bradford.
24"x24' Prentice.
21"x10' LeBlond extra heavy duty

TURRET LATHES and SCREW MACHINES

Nos. 1 and 3 Woods-tilted.
Nos. 52, 53, 55 Nat'l Acme auto.
1⅝" cap. Smurr & Kamen.
21" and 24" Gisholt.

SHAPERS

16" B. G. Queen City.
20" Smith & Mills.
25" Smith & Mills.
14" Niles travelling head.

DRILLS

Baush No. 1, multiple spindle.
32" Hoefer, sliding head.
6' ceiling.
4, 24" Foote-Burt, single base.

MILLING MACHINES

No. 1½ Valley City, plain.
No. 4 LeBlond plain.
No. 2 Brown & Sharpe, heavy.
24"x20"x8' Ingersoll.

MISCELLANEOUS

Band saw, Clark, compound.
Gear miller, No. 1 Bilton.
Planers, Gray, 36" and 42".
Press, No. 2 Toledo O. B. I.
Press, Cam Drawing, No. 24 Toledo
Sand Blast, Boland.
No. 20 Bryant grinders (5).
Press, No. 75 O. B. Toledo.

THE OSBORNE & SEXTON MACHINERY COMPANY

Dept. H.

COLUMBUS OHIO

KINSEY

Guaranteed Factory Rebuilt Tools

LATHES

Putnam 64"x37' grd. hd. lathe; m. d.
Fifield 40"x24', rais. blocks, belt drive.
Bradford 24"x12' lcg lathe;grd.fd.;c.d.
Reed 24"x12' l.c.g.;s.b g.;belt cone dr.
Reed center dr. Axle Lathe; m. d.
Bradford 20"x10' lcg lathe;grd.fd;;c.d.
Bradford 20"x8' q.c.g.; taper att.; c.d.
LeBlond 18"x10' Late Type; with turret; c. d.
Bradford 18"x8' lcg lathe;grd. fd.; c.d.
LeBlond 18"x8' l.c.g.;d.c. mtr.driven.
LeBlond 17"x6' Mfg. Type; cone dr.
Bradford 16"x8' hd. q.c.g. lathe; c. d.
Willard 12"x6' semi-q.c.g. lathe; c.d.
LeBlond No. 9 Multi-cut lathe, s. p. d.
Chard 16"x8' q. c. g. Lathe: c. d.
McCabe 50—27" dble. spindle Lathe, d. c., m. d.

SHAPERS

28" Smith & Mills b.g.shaper; grd.m.d.
26" G. & E. b. g., s. p. d.
25" Smith & Mills plain, b.g., cone dr.
24" Cincinnati, b. g., cone drive.
22" Ohio, b. g., cone drive.
Barker 16" pl. crank shaper; cone dr.
12" Smith & Mills plain crank, b. d.

MISCELLANEOUS

Atkins No. 3 metal cutting band saw, belt drive.
Racine 6"x6' cab. base saw; b.d. wet.
Racine 13"x13" hack saw, belt drive.
6"x6" Peerless H.S. Saws, b. d.
4½"x4½" Napier horiz. hack saw, b.d.
Fosdick No. 2-A horiz. floor type bor. mill, b. d.
Universal 3" dia. bar, hor. bor. mill, m.d.
Lucas 4" dia. bar horiz. boring mill, m.d.
Grand Rapids No. 4 drill grinder, m. d.
Ohio No. 3 cutter & tool grinder; b. d.
Cin'ti No. 1½ cutter & tool grinder; bd.
LeBlond No. 1 cut. & tool grinder; bd.
Bertsch 10'x10' Press Brake, motor dr.
American Can Co. No. 2o.b.i Press b.d
Toledo No. 3 o.b.i. Press; b. d.
Pangborn sand blast equip.; like new.
Niagara No. 252 power squar. shear; 14 ga. x 52"; b. d.
J. & L. 2 spdl. turret lathe, g. hd., chuck, s. p. d.
B. & O. No. 8 turret lathe, bar, b. d.
Gisholt 21" tilted type turret lathes, m. d. (2).
Chicago 9"x8" Air Comp.; b. d.
Bellevue No. 14 indus. furn.; oilburning
P. & W. thread mill; 6"x48"; b. d.
Theil die filing machine, motor driven.

PLANERS

60"x60"x14' Cincinnati; 2 hds.; b. d.
55"x55"x30' Betts, spur geared 2 hds. on rail, motor drive.
36"x36"x16' Gray planer, 2 hds.; bd.
32"x32"x10' Gray planer; 2 hds., bd.
32"x32"x14' Gray planer, 2 hds.; bd.
30"x30"x18' Gray planer, 1 hd.,, bd.
26"x26"x10' Gray; 2 hds.; m. d.
26"x26"x6' American, belt drive.

MILLING MACHINES

Rockford No. 1½ plain miller; p.f.; b.d.
Ingersoll 30x30x20' milling machine; 5 heads. m. d.
Cincinnati Nos. 4, 3, 2 pl.; cone dr.
Becker No. 6 vertical h. d.; cone dr.
Brown&S. No. 1Y Pl. Miller Cone Dr.
Brown&S. No. 0Y Pl. Miller cone dr.
Garvin No. 12 Miller; c. d.

GRINDERS

Gardner No. 2 b. b. disc grinder; b. d.
B. & S. No. 26 plain cylindrical; b. d.
B. & S. No. 11 plain cylindrical; b. d.
No. 2 Diamond surf. grinder, motor dr.
Ott No. 8 plain cyl. Grinder; 6"x18"; belt drive.
Modern 12"x24"; pl. cylindrical; b. d.
Heald No. 60 Internal Grind.; b. d.
Landis No. 1½ universal & tool; b. d.
Heald No. 65 Internal gr.; b.d.

DRILLS, Radial & Sensitive

American 3' triple purp. radial; s.p.d.
American 6' triple pur. radial drill, m.d.
Bausch 8-sp. multi drill; No. 3 mt; spd.
Fairbanks 20" stat. hd. drill; bg; pf; bd.
Fosdick 3" Radial; 48" arm; s. p. d.
8-spindle Moline hole drill, cone drive.
3½' Cinti-Bick. RC radial, d.c., m. d.
Cinti-Bick. 3' radial dr.; d.c. with mtr.
Mueller 4' radial, extend. column, s.p d.
Fosdick 5' box column radial, s. p. d.
Colburn No. 2 hi duty; t. & l. pul. dr.
Baker No. 310 hvy. duty, belt driven.
Foote-Burt hd. prod. 4-spin. drill; pf; s. p. d.
Foote-Burt No. 25 h. d.; sgl. pul. dr.
Foote-Burt 4-spindle rail type; b. d.
Barnes camel back 2-spindle; belt dr.
Barnes 3-spindle 20"; p. f.; belt dr.
Avey No. 3 b.b. sens. drill; m. d.
Avey No. ½ high speed 6-sp. drill; b.d.

THE E. A. KINSEY CO.

333 West Fourth St., *Est. 1886* **Cincinnati, O.**

Index of Advertisers

Aaron Machinery Co. 169
Abart Gear & Machine Co. 133
Abbott Tool & Equipment Co. 178
Acme Industrial Co. 102
Ajax Flexible Coupling Co. .....
Alamo Engine Co. .....
Allsteel Press Co., Inc. 55
American Hollow Boring Co. 132
American Tool Works, Inc. .....
Antes Co., B. C. 135
Anderson Bros. Mfg. Co. 141
Apex Machine Co. 95
Armglo Company 137
Armstrong-Blum Mfg. Co. ..... Inside Front Cover
Armstrong-Bray & Co. 146
Armstrong Bros. Tool Co. 53
Atlas Press Co. 104

Baldor Electric Co. 100
Banner Mfg. Co. 37
Baumbach Mfg. Co., E. A. 161
Belyea Company 172
Bennett-Rafkin Machinery Co. 193
Bernstein & Co., Geo. M. 201
Beverly Throatless Shear Co. 140
Blackmer Pump Co. 120
Bleser Mfg. & Mchy. Co. 178
Bradley Machinery Co. 198
Brandt Machinery Sales 171
Breuer Electric Co. 92
Brewster Company, Inc. 135
Brown Machinery Co. 180
Brown & Sharpe Mfg. Co. 24
Brownell Machinery Co. 174
Buffalo Forge Co. 10
Burke Machine Tool Co. 145
Burns Machinery Co., F. W. 195
Burr & Son, J. T. 134

Carlson Mfg. Co., C. H. 134
Carroll Mfg. Co., L. W. 140
Carroll & Son, Wm. 142
Challenge Machinery Co. 122
Chicago Die Casting Mfg. Co. 161
Chicago Electric Co. 207
Chicago Rawhide Mfg. Co. .....
Chicago Rivet & Machine Co. 214
Chicago Tool & Engineering Co. 112
Chicago Wheel & Mfg. Co. 108-109
Cincinnati Mchy. & Supply Co. 190
Cleereman Machine Tool Co. 83
Clements Mfg. Co. 145
Clinton Machinery Co. 209
Colonial Bushings Co. 96
Continental Mch. Specialties, Inc. 89
Conway Clutch Co. 75
Commercial Centerless Grinding Co. 140
Cullman Wheel Co. ..... Back Cover

Dalitz, Harry 174
Dalrae Tools Co. ..... Front Cover
Davis Machinery Co. 174
Dayton Rogers Mfg. Co. 120
Dell, Frank M. 202
Delta Equipment Co. 204
Delta Mfg. Co. 42
Desmond-Stephen Mfg. Co. 142
Dreis & Krump Manufacturing Company ..... Inside Back Cover
Dumore Company 106

Eastern Machinery Co. 183-184-185
Eisler Engineering Co., Inc. 120
Elyria Belting & Machinery Co. 169
Emerman, Louis E. 181
Erie Electric Motor Repair, Inc. 194
Errington Mechanical Laboratory 101
Essex Brass Corp. 127
Easley Machinery Co., E. L. 194
Etco Tool Co. 93

Failor-Strafer Machinery Co. 178
Falk Mill Supply Co., Inc. 196
Famco Machine Co. 91
Faulk, F. R. 134
Fauver, J. N. 31
Federal Press Co. 59
Federal Products Corp. 30
Flynn Manufacturing Co. 155
Fort Wayne Machine Co. 181
Foster Machinery Co. 169
Fuchs Machinery & Supply Co. 174
Fulflo Specialties Co. 90

Gairing Tool Co. 61
Galland-Henning Mfg. Co. 27
Gallmeyer & Livingston Co. 5
Ganey Machinery Co. 174
General Blower Co. 178
Gits Bros. Mfg. Co. 147
Globe Machinery Co. 179
Goldman, Harvey H. 207
Goldsher Machinery Co. 169
Graham Manufacturing Co. 165
Grant Mfg. & Machine Co. 139
Great States Mfg. Co. 175
Greene, Tweed & Co. 116
Grobet File Corporation 144
Grob Brothers 11

Hamilton Mfg. Co. 130
Hamilton Tool Co. 142
Hammond Machinery Builders 67
Hardinge Brothers, Inc. 6
Hartford Special Machinery Co. 165
Haskins Co., R. G. 16, 21
Hassal John, Incorporated 167
Henry & Wright Mfg. Co. 12
Heuser Manufacturing Co. 22
High Speed Hammer Co. 213
Hill-Clarke Machinery Co. 187
Hobart Bros. 110
Hotel Barlum 128
Hotel Gibson 125

Index of Advertisers—Continued

Howarth Machinery Co., C. C. 206
Hyman & Son, Joseph 179

Illinois Testing Laboratories, Inc. 126
Indianapolis Machinery & Supply Co. 200
Industrial Machinery Co. 198
Inland Machinery Co. 199
International Machinery Co. 178
Interstate Machinery Co. 94, 188
Iroquois Machinery Co. 198
Janette Mfg. Co. 122
Johnson & Sons Mchy. Co., Wm. C. 179
Johnson Tool Co. 136
Jones & Lamson Machine Co. 13
Jones Mch. Tool Co. Cincinnati 205
Jones Machinery Co. 181

Kinsey Co., E. A. 210
Klauber Machinery Co. 176
Koch Test Indicator 136

L-W Chuck Co. 107
Lake Machinery Co. 208
Land, L. J. 205
Lang Machinery Co. 177
Lesney Mche. & Mfg. Co. 45
Lewthwaite Machine Co., T. H.
Libert Machine Co. 129
Lincoln Electric Co.
Linley Bros. Co. 118
Littell Machine Co., F. J. 71
Lovejoy Flexible Coupling Co. 138
Lucas & Son, J. L. 203
Luma Electric Equipment Co. 163

M-B Products 29-157
McDonald Machinery Co. 186
McMahon Co., Frank 146
Machinery Dealers, Inc. 199
Mall Tool Company 81
Marr-Galbreath Machinery Co. 170-171
Martin Tool & Die Works, J. E. 132
Master Machine & Tool Co. 38
Meylan, A. R. & J. E. 146
Midwest Equipment Co. 206
Midwest Tool & Engineering Co. 146
Miles Machinery Co. 191
Modern Collet & Machine Co. 18-19
Modern Machine Corp 138
Modern Machine Tool Co. 35
Molitor Machry. Co., Chas. A. 181
Moorhouse, Frank K. 206
Morey Machinery Co. Inc. 189
Morrison Machine Products, Inc. 7
Morton Machinery Co. 180
Motor Repair & Mfg. Co. 192
Moyer, J. N. 208

National Machine Tool Co. 149
Nicholson & Co., W. H. 105
Nielsen, Inc. 126-167
Norgren Co., C. A. 28
Norton-Broadway Machinery Co. 203

O'Brien Machinery Co. 171
Odin Universal Corp. 49
Ohio Machinery & Supply Co.
Oliver Instrument Co. 77
Oliver Machinery Co. 32
Osborne & Sexton Mchy. Co. 209
Ott Machinery Sales, Inc. 177

Parsons-Merritt Co. 125
Passman Brothers 194
Pier Equipment Co. 39
Plunket Machine Co. 128
Power Machine Co. 120
Pratt & Whitney, Div., NBP Co. 46
Precision Tool Co. 97
Printz Electric Co. 131
Procunier Safety Chuck Co. 54
Production Machine Co. 130
Progressive Tool & Cutter Co. 69
Prutton Machinery Co. 179
Putnam Tool Co. 23
Pyrometer Instrument Co. 148

R & L Tools 8-9
Racine Tool & Machine Co. 123
Rasmussen Machine Co. 127
Reich Mfg. Co., J. R.
Reliance Machinery Sales Co. 172
Rickert Shafer Co. 157
Ridge Tool Co. 111
Rigid Tool Holder Co. 149
Rivett Lathe & Grinder, Inc 4
Robbins Engineering Co. 73
Rockford Iron Works 57
Rogers & Co., Samuel C. 153
Rogers Mfg. Co., Dayton 120
Roll Supply Co. 181
Roenkranz, Weinbecker & Co. 204
Ross Operating Valve Co. 36
Rotor Air Tool Co. 26
Russell Boring Bar Co. 144
Russell Machine Co. 204
Ruthman Machinery Co. 143

Sampson Tool Co., W. C. 198
Schauer Machine Co. 159
Scherr Co., George 123
Schmidt, Geo. T., Inc. 63
Scott-Bansbach Machinery Co. 175
Scully-Jones & Co. 43-206
Segal Machinery Co. 204
Sellew Machine Tool Co. 118
Seneca Falls Machine Co. 134
Service Co. 176
Sheldon Machine Co. 114
Shunk Mfg. Co. 180
Simmons Machine Tool Corp. 192
Skilsaw, Inc. 51
South Bend Lathe Works 41
Speedway Mfg. Co. 155
Stackbin Corp. 88
Standard Electrical Tool Co. 131
Standard Machinery Co. 176

Index of Advertisers—Continued

Standard Machine Co. 176
Standard Pressed Steel Co. 113
Standard Shop Equipment Co. .....
Stanley Works 103
Star Machine & Engineering Co. 159
Steege Machinery Co., W. L. 139
Strand & Co., N. A. 15
Strippit Corporation 144
Strong, Carlisle & Hammond Co. 197
Sun Machinery Co. 196
Sunnen Products Co. 25
Super Tool Co. 33
Surplus Stock & Mchy. Co., Inc. 208
Sutton Tool Co. 40
Swedish Gage Co. of America 133

Tannewitz Works 144
Taylor Machine Co. 129
Temco Electric Motor Co. 117
Titan Tool Co. 121
Toman & Co. 151
Tomkins-Johnson Co. 14
Triplex Screw Co. 115

United Machinery & Supply Co. 180
Universal Engineering Corp. 137-141
Universal Power Corp. 148
Used and Rebuilt Machinery 169-210

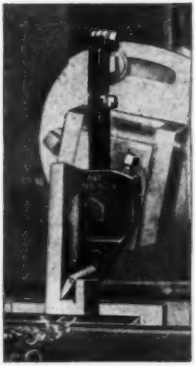
Vacuum Cup Metal Pulley Co. 138
Valley Electric Corp. 163
Victor Machinery Co. 197
Victor Machinery Exchange 182
Vinco Tool Co. 85
Vine, R. A. 208
Vonnegut Moulder Corp. 44

Wain Machinery Sales, Chas. E. 171
Walls Sales Corporation 147
Walton Co. 143
Wardwell Manufacturing Co. 151
Weldon Tool Co. 5
Wells Manufacturing Corp. 98
Wertman Machinery Co. 176
Western Machine Tool Works 65
Western Tool & Mfg. Co. 148
West Penn Machinery Co. 173
White Dental Mfg. Co., S. S. 87
White Machinery Co., A. D. 202
Whitney Metal Tool Co. 17
Wigglesworth Machinery Co. 171
Wilson, K. R. 119
Wittek Manufacturing Co. 79
Wodack Electric Tool Corp. 148
Wolnick Machinery. Co. 169
Wyzenbeek & Staff 99

Yost Mfg. Co. 140

Ziegler Tool Co. 20

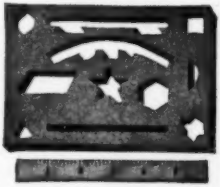
BRUNO SLOTTING ATTACHMENT
$25.00 Increases Shaper Usefulness



The Bruno Slotting Attachment adds immeasurably to the usefulness of any shaper or planer by cutting down all slotting time to the very minimum. Made of Heat Treated Forgings.

Sent on 10 days trial.

These shapes are typical of work you can do with your shaper equipped with a Bruno.

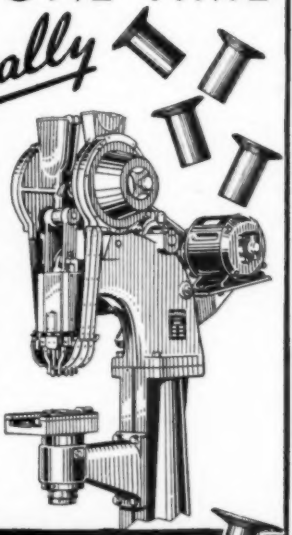


Send for literature.

HIGH SPEED HAMMER CO.
311 Norton St., Rochester, N. Y.

NEW MACHINE SETS 4 RIVETS AT ONE TIME

Automatically



● Originally developed for a large car manufacturer, the same application is now available to general industry. It sorts, feeds, inserts and sets 4 rivets with a single pedal operation. STILL LOWER ASSEMBLY COSTS ARE NOW PRACTICAL. Tell us your problems and send sample assembly with inquiry, if possible.

Single, Double, Triple and Quardruple Rivet Setters for Tubular and Split Rivets

Chicago
RIVET & MACHINE CO.
1854 S. 54th Ave.
Cicero P. O. Chicago, Ill.

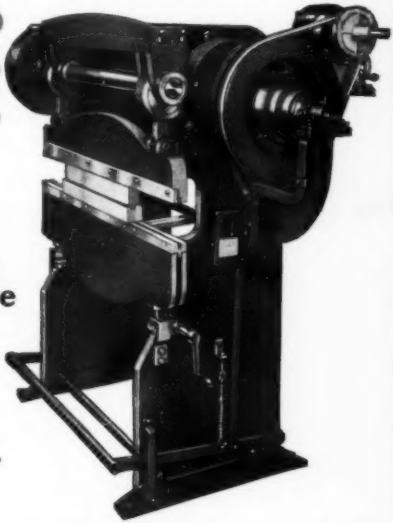
TUBULAR AND SPLIT RIVETS—ALL METALS

Use QUICKMAIL COUPON NO. 56

It will bring you our rivet price list and illustrations of Chicago Automatic Rivet Setters. On specific production problems write letter and send sample assembly or blue print.

EFFICIENCY

CHICAGO PRESS BRAKE NO. 253



Variable Speed Drive

Rapid Forming

of

Sheet Metal Sections Used In

Stoves
Refrigerators
Soda Fountains
Steel Cabinets
Metal Furniture
Steel Boxes
Store Fixtures
Etc., Etc., Etc.

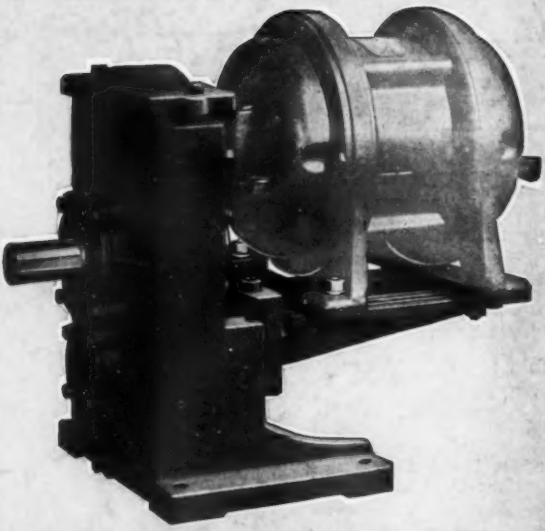
Work formerly done by large machines can now be handled with a small, but powerful one, THE CHICAGO PRESS BRAKE NO. 253. Users of large press brakes are using them for small work as they are faster and operated more efficiently.

Send Coupon No. 7 Today for Illustrated Bulletin and Low Price

DREIS & KRUMP MFG. CO.

7440 Loomis Blvd., CHICAGO, ILL.

SPEED REDUCERS



· · BY CULLMAN · ·

Cullman Speed Reducers are made in Single, Double and Quadruple reduction type, in sizes for motors from 1/8 to 15 H. P. Special adjustable bases are furnished for mounting odd frame motors.

Send Coupon No. 4 for Catalogue

THE CULLMAN WHEEL CO.

1359 Altgeld Street, CHICAGO, ILLINOIS